02-8910-32-PA
REV. NO. 0

FINAL DRAFT
PRELIMINARY ASSESSMENT
UNITED STATES PRINTING INK
EAST RUTHERFORD, NEW JERSEY

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8910-32
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

FEBRUARY 9, 1990

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

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277959

02-8910-32-PA
Rev. No. 0

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART I: SITE INFORMATION

1. Site Name/Alias United States Printing Ink (USPI)

   Street 343 Murray Hill Parkway

   City East Rutherford State NJ Zip 07073

2. County Bergen County Code 003 Cong. Dist. 9

3. EPA ID No. NJD095171948

4. Latitude 40° 49' 13" N Longitude 74° 05' 33" W

   USGS Quad. Weehawken, NJ - NY

5. Owner Millmaster Onyx Group Kewanee Ind. Inc. Tel. No. (212) 687-2757

   Street 99 Park Avenue

   City New York State NY Zip 10016

6. Operator United States Printing Ink Tel. No. (201) 933-7100

   Street 343 Murray Hill Parkway

   City East Rutherford State NJ Zip 07073

7. Type of Ownership

   ☒ Private ☐ Federal ☐ State
   ☐ County ☐ Municipal ☐ Unknown ☐ Other ______

8. Owner/Operator Notification on File

   ☒ RCRA 3001 Date 8-15-80 ☐ CERCLA 103c Date ______
   ☐ None ☐ Unknown

9. Permit Information

Permit	Permit No.	Date Issued	Expiration Date	Comments
NJDEP/DWR	NJ0003646	Unknown	Unknown	
NJDEP Air Permit	043644	8-3-79	8-3-84	
NJDEP Air Permit	043645	8-3-79	8-3-84	
NJDEP Air Permit	043646	8-3-79	8-3-84	

10. **Site Status**

☒ **Active** ☐ **Inactive** ☐ **Unknown**

11. **Years of Operation** 1961 **to** Present

12. **Identify the types of waste units (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.**

(a) **Waste Management Areas**

Waste Unit No.	Waste Unit Type	Facility Name for Unit
1	Drums	Drum Storage Area
2	Aboveground Tanks	Waste Ink Tanks

(b) **Other Areas of Concern**

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

A Hazardous Waste Investigation performed by the New Jersey Department of Environmental Protection (NJDEP) on October 31, 1980 revealed approximately 200 drums of ink stacked 3 high and located on a permeable surface. Directly behind the drum storage area was a dry streambed. The vegetation inside the streambed was stained black. A small area containing construction/demolition debris was observed by NJDEP during the previously noted inspection.

As a result of this inspection a Notice of Prosecution was recommended. It is not known if the notice was issued.

Additionally, during a NJDEP inspection in 1981 numerous spills of various colors were noted on the soils. These spills were being spread by rain water.

13. **Information available from**

Contact Amy Brochu **Agency** U.S. EPA **Tel. No.** (201) 906-6802

Preparer Peter Babich **Agency** NUS Corp. Region 2 FIT **Date** February 9, 1990

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 1 - Drums, Drum Storage Area

1. **Identify the RCRA status and permit history, if applicable, and the age of the waste unit.**

   United States Printing Ink (USPI) filed a Notification of Hazardous Waste Activity on August 15, 1980 and declared it was a generator, and a treatment, storage, or disposal facility (TSDF) of hazardous waste. On November 19, 1980, a Part A Hazardous Permit Application was submitted to the United States Environmental Protection Agency (U.S. EPA). The age of the waste unit is not known; however, USPI has been in operation since 1961.

2. **Describe the location of the waste unit and identify clearly on the site map.**

   The drum storage area is located on the west side of the production building.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

   The waste unit has a design capacity of 1,650 gallons. However, during a recent NUS Corp. Region 2 FIT off-site reconnaissance, approximately 250-300 drums were observed. It is not known if drums contained hazardous waste or raw material for ink production.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

   The physical states of the waste are liquid and powders or fines.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

   It is suspected that colored ink pigments contain metals such as lead, chromium, and barium. Also reported to be present are solvent wastes, caustic wastes, wash water wastes, and sludges from cleaning tubs used in the formulation of ink from pigments.

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

   The wastes generated by USPI are collected in 55-gallon drums and stored in the drum storage area on an asphalt surface. It is not known if the storage area has any type of containment system. During a 1981 inspection, NJDEP reported that drums were uncovered and spills were evident with the potential for migration due to storm runoff. The vegetation in a dry streambed directly behind the site was stained black.

Ref. Nos. 1, 2, 3, 4, 17

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 2 - Aboveground Tanks, Waste Ink Tanks

1. **Identify the RCRA status and permit history, if applicable, and the age of the waste unit.**

   United States Printing Ink (USPI) field a Notification of Hazardous Waste Activity on August 15, 1980 and declared it was a generator, and a treatment, storage, or disposal facility (TSDF) of hazardous waste. On November 19, 1980, a Part A Hazardous Permit Application was submitted to the United States Environmental Protection Agency (U.S. EPA). The age of the waste unit is not known; however, USPI has been in operation since 1961.

2. **Describe the location of the waste unit and identify clearly on the site map.**

   The tank storage area is located on the west side of the production building.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

   The waste unit consits of two 1,000-gallon tanks for the collection of waste inks. An inspection report dated 1981 indicated that there was 500 gallons of waste in one tank.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

   The physical state of the waste is liquid.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

   It is suspected that colored ink pigments contain metals such as lead, chromium, and barium. Also reported to be present are solvent wastes, caustic wastes, wash water wastes, and sludges from cleaning tubs used in the formulation of ink from pigments.

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

   The wastes generated by USPI are collected in two 1,000-gallon tanks. It is not known if these tanks were on an impermeable surface, or if they have any containment or diversion features.

Ref. Nos. 1, 2, 3, 4, 17

PART III: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.**

   On October 31, 1980 the New Jersey Department of Environmental Protection (NJDEP) performed a hazardous waste investigation. During this inspection it was noted that directly behind the drum storage area was a dry stream bed. The vegetation in the stream was stained black. Black sludge accumulation was noted on and next to the stream bank. The lowest point of this stream contained a black liquid. A drainage pipe from this stream emptied into a larger stream that is a tributary to Berrys Creek. It is suspected that some colored ink pigments may contain metals such as lead, barium, and chromium. On September 16, 1981 NJDEP again inspected USPI. It was reported that general housekeeping in the rear of the facility was poor and that spills of various colors were noted throughout the site on the soil. The spills were being spread by rain water.

   Ref. Nos. 3, 4

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

   Triassic sediments, composed of sands, fine sands, silts, clay, and gravel, are almost entirely underlain by sedimentary Passaic Formation (formerly known as the Brunswick Formation) shale. Although the primary permeability of sedimentary shale is low, appreciable amounts of water are found in joints and fractures. Unless a significant number of these joints and fractures are penetrated by a well, yields may be relatively small. The region is heavily dependent upon unconsolidated glacial deposits for water supply, and where these occur in buried, eroded rock channels and are thick and permeable, the glacial sediments represent the most important source of groundwater. In locations where the surficial deposits are thick and permeable, direct hydraulic connection with the underlying bedrock, adjacent streams, rivers, and lakes exists. The glacial till consists of silt, loess silty clays, silty loams and moderately permeable till. The permeability value is estimated to be between 10^{-5} to 10^{-7} cm/sec. The aquifer of concern is the Passaic Formation. The estimated permeability of the stratified drift and bedrock aquifers is between 10^{-3} to 10^{-5} cm/sec. Reported static water level from a local well is 14 feet. The direction of the water movement in response to pumping parallels the strike of the beds, which is southwest to northeast.

   Ref. Nos. 5, 7, 20

3. **Is a designated sole source aquifer within 3 miles of the site?**

   A sole source aquifer has not been designated within 3 miles of the site.

   Ref. No. 6

4. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

   The depth of the lowest point of waste deposited is reported to be ground level. The reported static water level from a nearby well is 14 feet. This indicates a depth to groundwater of approximately 14 feet.

   Ref. Nos. 7, 10

5. **What is the permeability value of the least permeable continuous intervening stratum between the ground surface and the aquifer of concern?**

The permeability value for overburden sediments consisting of silt, loess, silty clays, silty loams and moderately permeable till is estimated to be between 10^{-5} to 10^{-7} cm/sec.

Ref. No. 5

6. **What is the net precipitation for the area?**

The estimated net annual precipitation for the area is 12 inches.

Ref. No. 5

7. **Identify uses of groundwater within 3 miles of the site (i.e., private drinking source, municipal source, commercial, industrial, irrigation, unusable).**

There is one known private well that supplies drinking water drawn from the aquifer of concern within 3 miles of the site. This well supplies drinking water for approximately 4 people. There are also 3 commercial wells and one well used for irrigation within 3 miles of the site.

Ref. Nos. 8, 9, 18

8. **What is the distance to and depth of the nearest well that is currently used for drinking or irrigation purposes?**

Distance Approximately 2.6 miles **Depth** 110 feet

Ref. No. 9

9. **Identify the population served by the aquifer of concern within a 3-mile radius of the site.**

There is one known residence in Wallington using the aquifer of concern. The well is located on Kossuth Street, approximately 2.6 miles northwest of the site and serves about 4 people.

Ref. No. 21

SURFACE WATER ROUTE

10. **Describe the likelihood of a release of contaminant(s) to surface water as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminants to the facility.**

On October 10, 1980 an inspection conducted by NJDEP reported black sludge which appeared attributable to the site was noted on and next to the stream bank. It is suspected that some inks contain metals such as lead, barium, and chromium. Additionally during a 1981 inspection by NJDEP, it was reported that housekeeping was poor and that spills and open drums were observed.

Ref. Nos. 3, 4

11. **Identify and locate the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.**

The nearest downslope surface water is an unnamed tributary to Berrys Creek. Drainage is via storm drains or a drainage ditch which flows to this tributary and empties into Berrys Creek and ultimately discharges to the Hackensack River.

Ref. Nos. 4, 11

12. **What is the facility slope in percent? (Facility slope is measured from the highest point of deposited hazardous waste to the most downhill point of the waste area or to where contamination is detected.)**

The slope of the facility is less than 3 percent.

Ref. Nos. 10, 11

13. **What is the slope of the intervening terrain in percent? (Intervening terrain slope is measured from the most downhill point of the waste area to the probable point of entry to surface water.)**

The slope of the intervening terrain is 0 to 3 percent.

Ref. Nos. 10, 11

14. **What is the 1-year 24-hour rainfall?**

The 1-year 24-hour rainfall for the area is approximately 2.75 inches.

Ref. No. 5

15. **What is the distance to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.**

The distance to the nearest downslope surface water is approximately 700 ft west of the site.

Ref. Nos. 4, 11

16. **Identify uses of surface waters within 3 miles downstream of the site (i.e., drinking, irrigation, recreation, commercial, industrial, not used).**

Berrys Creek, which is located about 0.25 mile southeast of the site, is classified as FW2-NT/SE2. Designated uses are primary and secondary contact recreation. Other uses include industrial and agricultural water supply and potable water after treatment as required by law or regulation. Berrys Creek discharges to the Hackensack River, which is classified as SE2. In all SE2 waters, the designated uses are maintenance, migration and propagation of natural and established biota, migration of diadromous fish, maintenance of wildlife, secondary contact recreation, and any other reasonable uses.

Ref. Nos.12, 14, 15

17. **Describe any wetlands, greater than 5 acres in area, within 2 miles downstream of the site. Include whether it is a freshwater or coastal wetland.**

The USPI site is located in an industrial area and is surrounded by a tidally affected coastal wetland which is greater than five acres in area. The, drainage from the site is via storm drains and a ditch at the rear of the property that discharge to an unamed tributary of Berrys Creek west of the site.

Ref. No. 11

18. **Describe any critical habitats of federally listed endangered species within 2 miles of the site along the migration path.**

There is no critical habitat of a federally endangered species identified within 2 miles of the site.

Ref. No. 13

19. **What is the distance to the nearest sensitive environment along or contiguous to the migration path (if any exist within 2 miles)?**

A coastal wetland exists approximately 500 feet from the site. Drainage from the site is via storm drains and a ditch at the rear of the property that discharge to an unamed tributary of Berrys Creek west of the site.

Ref. Nos. 10, 11

20. **Identify the population served or acres of food crops irrigated by surface water intakes within 3 miles downstream of the site and the distance to the intake(s).**

There are no surface water intakes along Berrys Creek or the Hackensack River within 3 miles downstream of the site.

Ref. No. 8

21. **What is the state water quality classification of the water body of concern?**

Berrys Creek, which is located about 0.5 mile southeast of the site, is classified as FW2-NT/SE2. Designated uses are primary and secondary contact recreation. Other uses include industrial and agricultural water supply and potable water after treatment as required by law or regulation. Berrys Creek discharges to the Hackensack River which is classified as SE2. In all SE2 waters the designated uses are maintenance, migration and propagation of natural and established biota, migration of diadromous fish, maintenance of wildlife, secondary contact recreation,and any other reasonable uses.

Ref. Nos. 12, 14, 15

22. **Describe any apparent biota contamination that is attributable to the site.**

During an off-site reconnaissance conducted by NUS Corp. Region 2 FIT in October of 1989 no apparent biota contamination was observed. However, an on-site inspection conducted by NJDEP in October of 1980 revealed stained soils and a dry streambed with stained vegetation.

Ref. Nos. 4, 10

AIR ROUTE

23. **Describe the likelihood of a release of contaminant(s) to the air as follows: observed, alleged, potential, none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.**

    There is a potential for a release of contaminants to the air. Soils and dry stream beds with black sludge accumulation may contain heavy metals. During dry and dusty conditions, particulates could be released into the air. Solvents which were used for cleaning may have been released to the air due to volitilization. Currently, there is no likelihood of volatile releases since solvent washes were discontinued in August of 1981. It was reported during an inspection by NJDEP in 1981 that open drums were observed. It is not known if these drums contained waste ink or raw materials for processing.

    Ref. Nos. 2, 3, 4

24. **What is the population within a 4-mile radius of the site?**

    The population within a 4-mile radius of the site is approximately 259,000.

    Ref. No. 16

FIRE AND EXPLOSION

25. **Describe the potential for a fire or explosion to occur with respect to the hazardous substance(s) known or suspected to be present on site. Identify the hazardous substance(s) and the method of storage or containment associated with each.**

    The suspected contaminants are metals such as lead, barium, and chromium. It was reported during an inspection by NJDEP in 1981 that open drums were observed. The contents of these drums are unknown. Previously, solvents were used for cleaning mixing tubs. This practice was discontinued in August of 1981 and the tubs are currently cleaned out with rags. Presently, there is no apparent threat of fire or explosion.

    Ref. Nos. 3, 4

26. **What is the population within a 2-mile radius of the hazardous substance(s) at the facility?**

    The population within a 2-mile radius of the site is approximately 52,000.

    Ref. No. 16

DIRECT CONTACT/ON-SITE EXPOSURE

27. **Describe the potential for direct contact with hazardous substance(s) stored in any of the waste units on site or deposited in on-site soils. Identify the hazardous substance(s) and the accessibility of the waste unit.**

    There is potential for direct contact with hazardous substances at this site. Waste inks, which may contain heavy metals, were observed accumulated in a dry stream bed. There is no barrier completely surrounding the facility.

    Ref. Nos. 4, 10

28. How many residents live on a property whose boundaries encompass any part of an area contaminated by the site?

There are no residential properties whose boundaries encompass any part of the site.

Ref. Nos. 10, 11

29. What is the population within a 1-mile radius of the site?

The population within a 1-mile radius of the site is approximately 9,000.

Ref. No. 16

PART IV: SITE SUMMARY AND RECOMMENDATIONS

United States Printing Ink (USPI) is located in an industrial area of East Rutherford, Bergen County, New Jersey, which is surrounded by a tidally affected marshland. A residential area is approximately 0.5 mile to the west. Other businesses are adjacent to the site.

USPI completed and submitted a RCRA Part A application in 1980 as a generator, and treatment, storage and disposal facility (TSDF). The facility also has several air permits and was permitted under NJPDES to discharge to Berrys Creek.

USPI manufactures colored and black inks, primarily for the newspaper industry. All mixing and preparing of inks is done inside the process building. The finished product is sold in containers ranging from 5-gallon pails to bulk tank trucks. USPI discharges noncontact roller mill cooling water to Berrys Creek.

During a hazardous waste investigation conducted by NJDEP in October of 1980, it was reported that approximately 200 drums of ink were stored outside on a permeable surface and that many of the drums were in poor condition and were lacking tops. Directly behind the drum storage area was a dry streambed. The vegetation in the stream was stained black. Black sludge accumulation was noted near and on the stream bank. The off-site migration of waste appeared to be the result of storm runoff. Samples of the waste substances were collected; however, the results of their analyses were not available. A drainage pipe from this stream emptied into a larger stream that is a tributary to Berrys Creek. Also, during the previously noted inspection a small area containing construction/demolition debris was observed. From this investigation, it was recommended that USPI be issued a Notice of Prosecution for disposing solid waste and hazardous waste. It is not known if the notice was issued. On September 16, 1981 NJDEP again inspected USPI and reported that general housekeeping was poor and that spills of various colors from drums and leaking tank trucks were seen throughout the site. The spills were being spread by rain water.

A **MEDIUM PRIORITY** screening site inspection is recommended for the USPI site. This recommendation is based on the following:

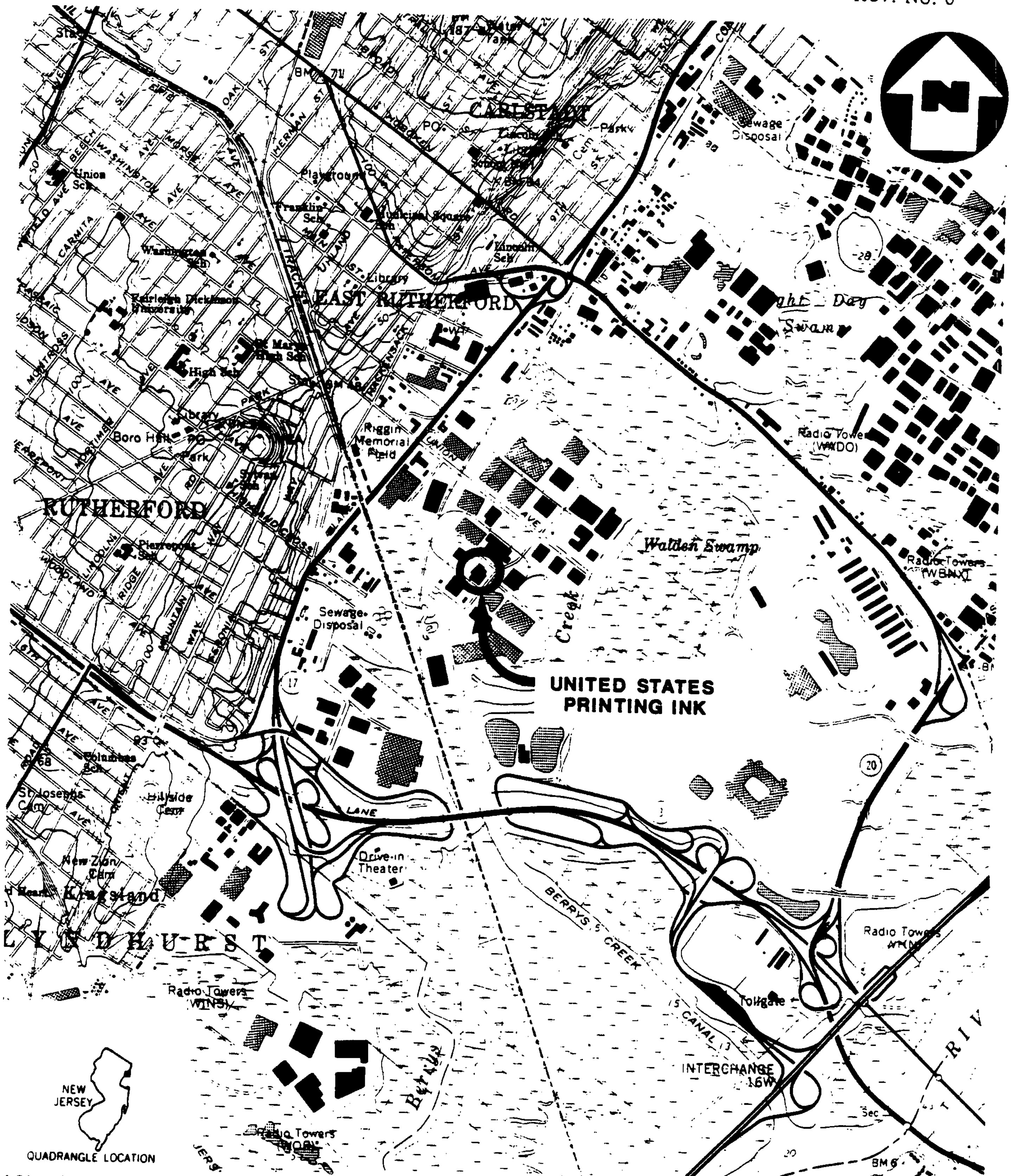
- There is a potential for direct contact with hazardous substances since there are no barriers in place to limit access to the area.
- Documentation indicates that there were several areas of stained soil and poor housekeeping practices. Off-site migration of wastes to a nearby dry streambed has been documented during an inspection by NJDEP.
- Surface water runoff from contaminated soils could potentially migrate to nearby sensitive environments.
- Contaminated soils could potentially become airborne during dry and dusty conditions. There are approximately 9,000 people, five schools, and two parks located within a 1-mile radius of the site.

ATTACHMENT 1

UNITED STATES PRINTING INK

EAST RUTHERFORD, NEW JERSEY

CONTENTS



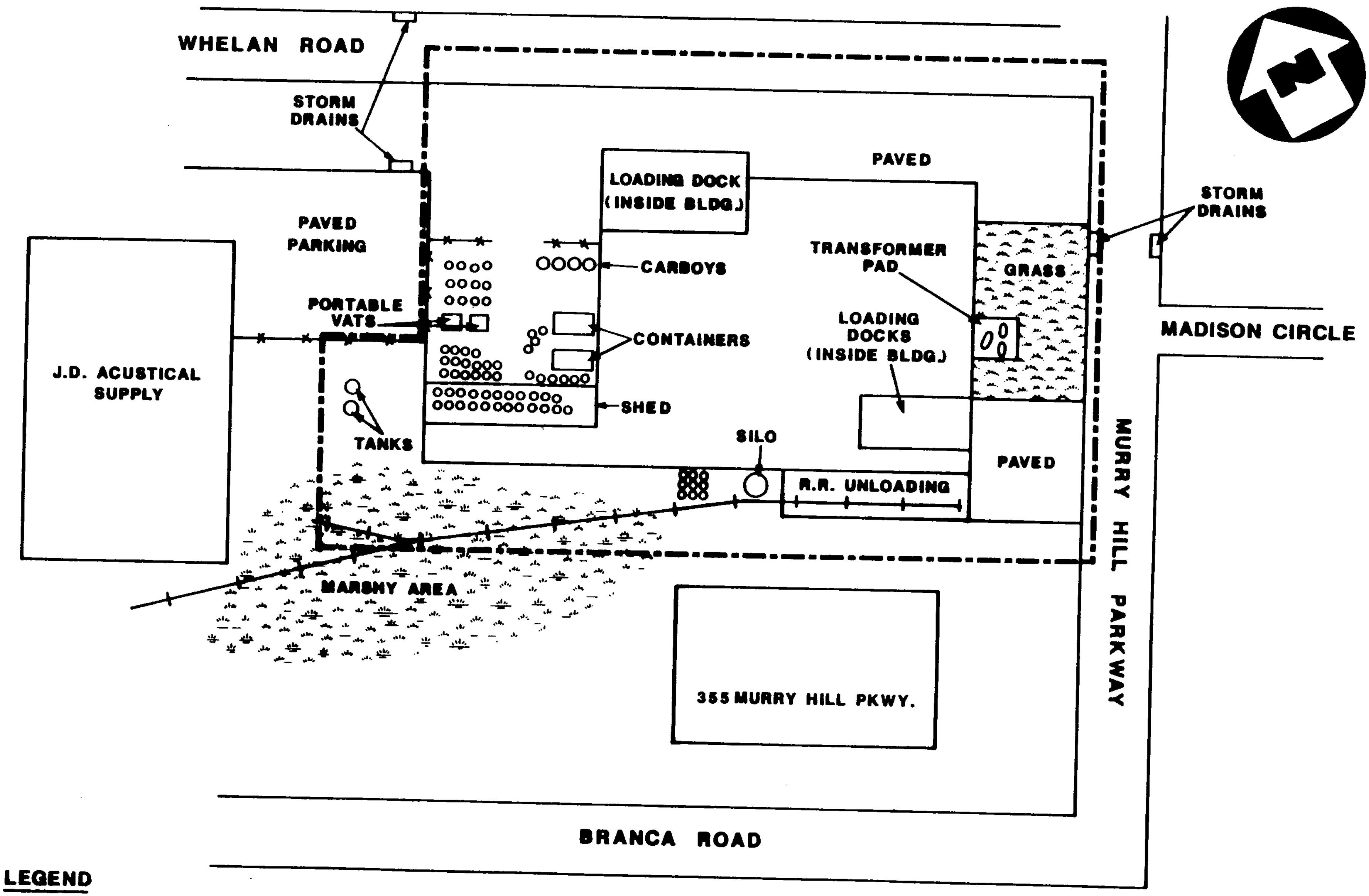
(QUAD) WEEHAWKEN, N.J.-N.Y.

SITE LOCATION MAP
UNITED STATES PRINTING INK
EAST RUTHERFORD, N.J.

SCALE: 1" = 2000'

FIGURE 1

NUS CORPORATION



LEGEND

APPROX. PROPERTY BOUNDARY FOR U.S. PRINTING INK

DRUMS

FIGURE 2

SITE MAP

UNITED STATES PRINTING INK, E. RUTHERFORD, N.J.

NOT TO SCALE

NUS CORPORATION

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EXHIBIT A

PHOTOGRAPH LOG

UNITED STATES PRINTING INK
EAST RUTHERFORD, NEW JERSEY

OFF-SITE RECONNAISSANCE: DECEMBER 15, 1989

*Note: Pictures taken during off-site reconnaissance performed on October 26, 1989 did not come out. Pictures retaken on December 15, 1989.

UNITED STATES PRINTING INK
EAST RUTHERFORD, NEW JERSEY
DECEMBER 15, 1989

PHOTOGRAPH INDEX

ALL PHOTOGRAPHS TAKEN BY TONY CULMONE

Photo Number	Description	Time
1P-10	View from Murray Hill Parkway looking west at front of building.	0755
1P-11	View of drum storage area from Whelan Road.	0757
1P-12	View of additional drums from Whelan Road.	0759
1P-13	View from Branca Road of tanks at rear of building.	0801
1P-14	View of southside of facility from Branca Road, behind 375 Murray Hill Parkway.	0803
1P-15	View of southeast corner of building showing loading docks, transformer and railroad tracks.	0805

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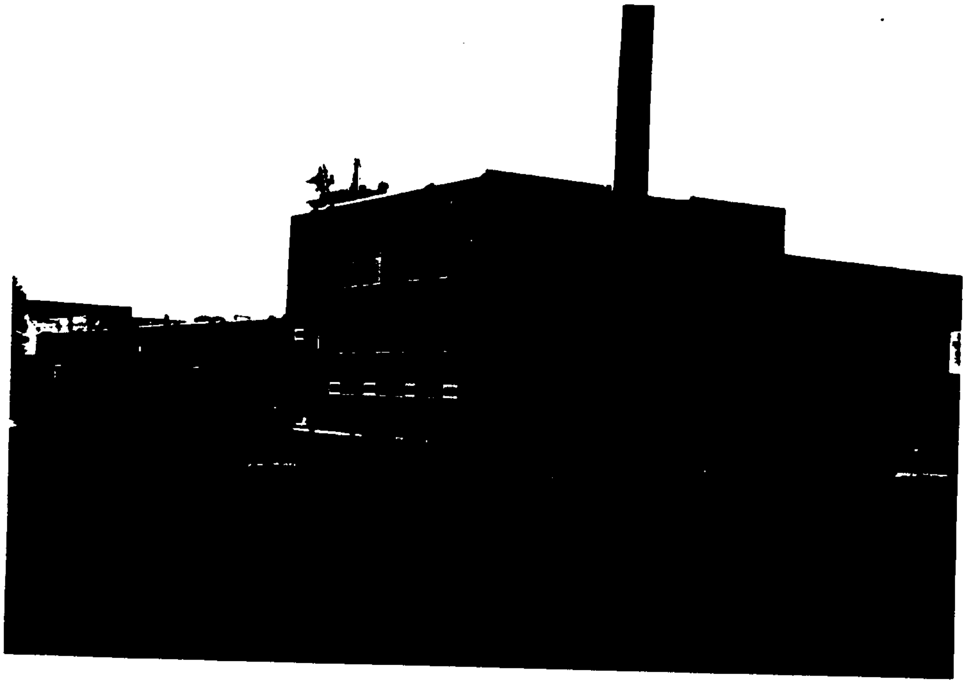

1P-10

December 15, 1989
View from Murray Hill Parkway looking west at front of building.

0755

1P-11

December 15, 1989
View of drum storage area from Whelan Road.

0757

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1P-12

December 15, 1989
View of additional drums from Whelan Road.

0759

1P-13

December 15, 1989
View from Branca Road of tanks at rear of building.

0801

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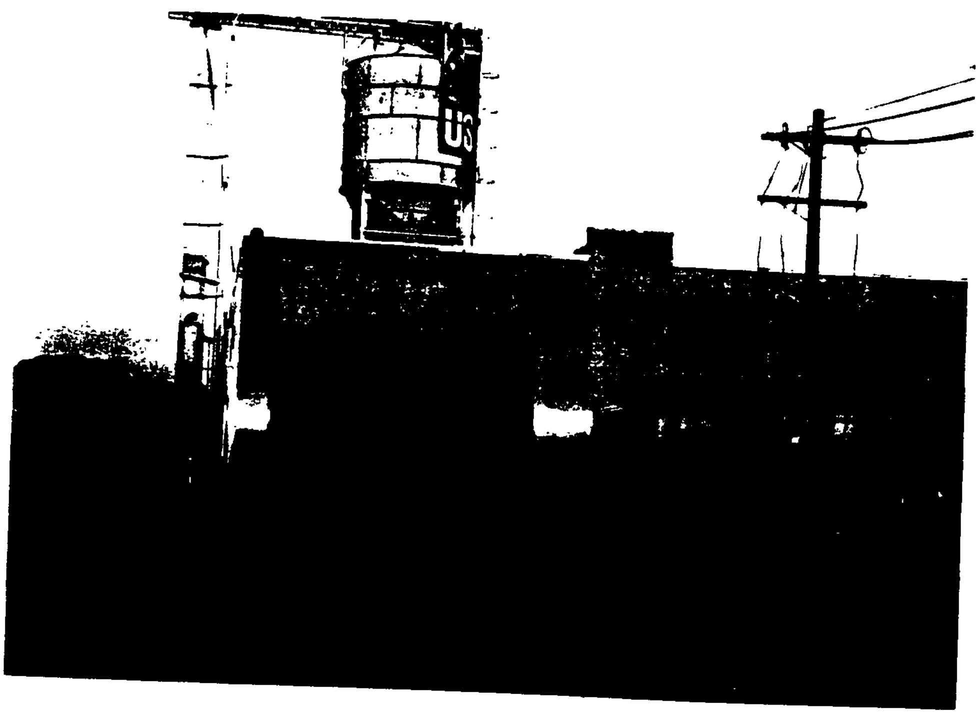
1P-14

December 15, 1989
View of southside of facility from Branca Road, behind 375 Murray Hill Parkway.

0803



1P-15

December 15, 1989
View of southeast corner of building showing loading docks, transformer and railroad tracks.

0805

ATTACHMENT 2

REFERENCES

1. U.S. EPA Hazardous Waste Permit Application, EPA Form 3510-3, United States Printing Ink, November 13, 1980.

2. HWDMS Master Facility Listing, New Jersey Department of Environmental Protection, (NJDEP), United States Printing Ink.

3. RCRA Generator Inspection Report, NJDEP, United States Printing Ink, September 16, 1981.

4. Hazardous Waste Investigation, NJDEP, United States Printing Ink, October 31 and November 11, 1980.

5. Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1986.

6. Federal Register, Volume 49, No. 16, January 24, 1984, 2943, Brunswick Shale and Sandstone Aquifer of the Ridgewood Area, New Jersey; Final Determination .

7. Olsen, Paul E. The latest Triassic and Jurassic Formations of the Newark Basin (Eastern North America, Newark Supergroup): Stratigraphy, Structure and Correlation. New Jersey Academy of Sciences Bulletin, Vol. 25, No. 2, Pages 25-51, 1980.

8. Project Note: From A. Culmone, to D. Cohen, (both of NUS Corp.) Subject: Clarification of telecon information for Bergen County EPI Sites, October 31, 1989.

9. Water withdrawal points within 5.0 miles of Lat, 40° 47' 31"N and Long. 74° 06' 12"W. Division of Water Resources, Bureau of Water Allocation, N.J. Dept. of Environmental Protection, October 18, 1988.

10. Preliminary Assessment Off-Site Reconnaissance Information Reporting Forms, United States Printing Ink, TDD No. 02-8910-32, NUS Corp. Region 2 FIT, Edison, New Jersey, October 26, 1989 and December 15, 1989.

11. Three-Mile Vicinity Map based on the U.S. Dept. of the Interior, Geological Survey Topographic Maps, 7.5 minute series, "Weehawken, NJ" Quadrangle, 1967, revised 1981 and "Orange, NJ" Quadrangle, 1966, revised 1979.

12. Proceedings of the AWRA Symposium on Coastal Water Resources, Wilmington, NC, May 1988.

13. Atlantic Coast Ecological Inventory, Newark, NJ-NY-PA, U.S. Fish and Wildlife Service, 1980.

14. NJDEP, Division of Water Resources, Surface Water Quality Standards, NJAC 7:9-4, Index D, July 1985.

15. State of New Jersey, New Jersey Administrative Code, Title 7, Department of Environmental Protection, Transmittal No. 1988-5, pp. 9-106 and 9-107, May 16, 1988.

16. General Sciences Corp., Graphical Exposure Modeling System (GEMS), Landover, Maryland, 1986.

17. Wagner, Travis. The complete handbook of hazardous waste regulations, Perry-Wagner Publishing Co., 1988.

REFERENCES (CONT'D)

18. Expanded Site Inspection Report, Industrial Latex Site, NUS Corp. Region 2 FIT, January 21, 1988, TDD No. 02-8903-76.

19. Census of Population, General population characteristics of New Jersey, U.S. Dept. of Commerce, Bureau of the Census, 1980.

20. Department of Environmental Protection, Well record, Marathon Enterprises, E. Union Ave, Rutherford, N.J., February 10, 1980.

21. Telecon Note: Conversation between Bob Siery, Wallington Department of Public Works and Peter Babich, NUS Corp., February 7, 1990.

REFERENCE NO. 1

Please print or type in the unshaded areas only (fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA — EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
HAZARDOUS WASTE PERMIT APPLICATION
Consolidated Permits Program
(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

F | N J D 0 9 5 1 7 1 9 4 8

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

[ ] 2. NEW FACILITY *(Complete item below.)*

C 8 | YR. 6 4 | MO. 0 4 | DAY 0 1 | FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

YR. | MO. | DAY | FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES — CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code*(s)* in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY — For each code entered in column A enter the capacity of the process.
1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C | DUP | T/A C: I

LINE NUMBER	A. PROCESS CODE (from list above)	B.1. AMOUNT (specify)	B.2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B.1. AMOUNT	B.2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 1	1,650000	G		7				
2					8				
3					9				
4					10				

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four—digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four—digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non—listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:
   For listed hazardous waste: For each listed hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non—listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.
2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*	D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

CONTINUE ON PAGE 3

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

I. EPA I.D. NUMBER (enter from page 1)	T/A	C	FOR OFFICIAL USE ONLY	T/A	C	
W NJD0 9517 1948	3	1	W DUP	3	2	DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	K086	12000	T	S01				
2	D005	500000	P	S01				
3	D008	1,800000	P	S01				
4	D007			S01				Included with above
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

EPA Form 3510-3 (6-80)

CONTINUE ON REVERSE

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTE (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

F6° 55/A F6° 56/A

EPA I.D. NO. (enter from page 1)

F NJD0 9517 1948 T/A 3 C 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)
40 49 130	074 05 335

VIII. FACILITY OWNER

☐ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. (area code & no.)
E ~~Millmaster Onyx Group Kewanee Ind., Inc.~~	212-687-2757

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F 99 Park Avenue	G New York,	NY	10016

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
Irving Gaines	[signature]	11/12/80

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
Robert W. Schmidt	Robert W. Schmidt	11/13/80

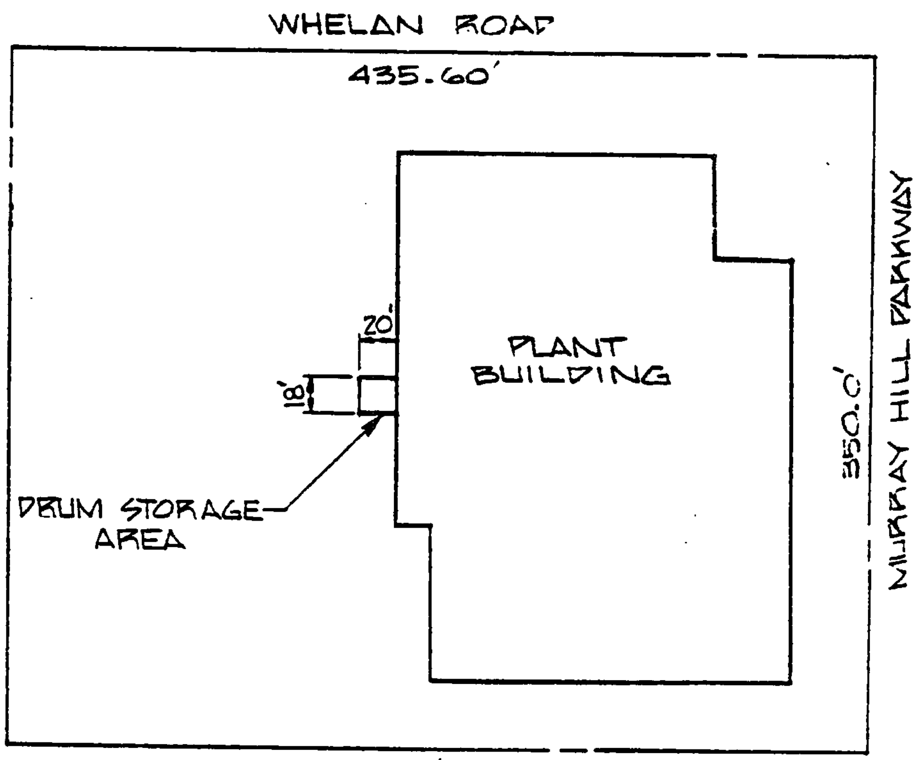
CONTINUE ON PAGE 5

Continued from page 4.

EPA I.D. #NJD095171948 oc

Form Approved OMB No. 158-S80004

V. FACILITY DRAWING *(see page 4)*



PLOT PLAN
UNITED STATES PRINTING INK COMPANY
E. RUTHERFORD, N.J.
SCALE: 1"=100.0'

REFERENCE NO. 2

NJD095171948 UNITED STATES PRINTING INK ... /83

343 MURRAY HILL PARKWAY
EAST RUTHERFORD NJ 07073
201/933/7100

CLOSURE DATE:

003 DISTRICT: BASIN: LATITUDE: 404913.0 LONGITUDE: 07405...

CT: COMMERCIAL: NON-REGULATED: OWNER TYPE: P FACILITY TYPE: GEN TSDF

OWNER ADDRESS	OPERATOR ADDRESS
MILLMASTER ONYX GROUP KEWANEE IND., INC.	U.S. PRINTING INK CORPORATION
99 PARK AVENUE	343 MURRAY HILL PARKWAY
NEW YORK NY 10016	EAST RUTHERFORD NJ 07073
212/687-2757	201/933-7100

NJ 07073

NOTIFICATION DATA

PERMIT STATUS: 1
NOTIFICATION RECEIVED: 8/15/80
NOTIFICATION ACKNOWLEDGED: 10/09/80
PART A RECEIVED: 11/19/80
(1) PART A ACKNOWLEDGED: 1/15/81
(2) PART A ACKNOWLEDGED:

PERMITS

TYPE	NUMBER
Y	00705
N	NJ0003646

DESIGN CAPACITY

PROCESS	AMOUNT	UNIT
S01	1650.000	G

TRANSPORTATION

WASTE DESCRIPTION

MT PROCESSES:
MT PROCESSES:
.226 MT PROCESSES: S01
MT PROCESSES: S01
.816 MT PROCESSES: S01
10.886 MT PROCESSES: S01

COMMENTS

157 820310 10.12358 W
451 810916 GEN-TSD

... NAME: ... NJD095171948 UNITED STATES PRINTING INK

EXISTANCE DATE: 4/01/61

343 MURRAY HILL PARKWAY
EAST RUTHERFORD NJ 07073
201/933/7100 CLO

COUNTY: BERGEN 003 DISTRICT: BASIN: LATITUDE: 404913.0

FACILITY STATUS: 1 MODIFY/CONSTRUCT: COMMERCIAL: NON-REGULATED: OWNER TYPE: P FACILITY TYPE

MAILING ADDRESS
SCHMIDT ROBERT REGIONAL MGR
343 MURRAY HILL PARKWAY
EAST RUTHERFORD NJ 07073

OWNER ADDRESS
MILLMASTER ONYX GROUP KEWANEE IND., INC.
99 PARK AVENUE
NEW YORK NY 10016
212/687-2757

OPERATOR AD
U.S. PRINTING
343 MURRAY HIL
EAST RUTHERFOR
201/933-

INDICATORS

CONFIDENTIALITY NOTIF : 0
CONFIDENTIALITY PART A : 0
NATURE BUSINESS IND : A
MAP STATUS IND : A
DRAWING STATUS IND : A
PHOTO STATUS IND : A
INDIAN LAND IND : N
OWNER/OPERATOR IND : N

NOTIFICATION DATA

PERMIT STATUS: 1
NOTIFICATION RECEIVED: 8/15/80
NOTIFICATION ACKNOWLEDGED: 10/09/80
PART A RECEIVED: 11/19/80
(1) PART A ACKNOWLEDGED: 1/15/81
(2) PART A ACKNOWLEDGED:

PERMITS

TYPE	NUMBER
Y	00705
N	NJ0003646

SIC CODES

2893

TRANSPORTATION

WASTE DESCRIPTION

WASTE CODE: D000	ESTIMATED AMOUNT:	MT	PROCESSES:
WASTE CODE: D003	ESTIMATED AMOUNT:	MT	PROCESSES:
WASTE CODE: D005	ESTIMATED AMOUNT:	.226 MT	PROCESSES: S01
WASTE CODE: D007	ESTIMATED AMOUNT:	MT	PROCESSES: S01
WASTE CODE: D008	ESTIMATED AMOUNT:	.816 MT	PROCESSES: S01
WASTE CODE: K086	ESTIMATED AMOUNT:	10.886 MT	PROCESSES: S01

COMMENTS

157 820310 10.12356 W
451 810916 GEN-TSD

REFERENCE NO. 3

RCRA GENERATOR INSPECTION FORM

COMPANY NAME:
US Printing Ink Corp.

EPA I.D. NUMBER:
NJD0951171448

COMPANY ADDRESS:
343 Murry Hill Parkway E. Rutherford, NJ.

COMPANY CONTACT OR OFFICIAL:
Herb L. Edelman

INSPECTOR'S NAME:
Alphonse Iannuzzi, Jr.

TITLE:
Vice President operations

BRANCH/ORGANIZATION:
NJDEP

CHECK IF FACILITY IS ALSO A TSD FACILITY / /

DATE OF INSPECTION:
9-16-81

	YES	NO	DON'T KNOW
(1) Is there reason to believe that the facility has hazardous waste on site?	X		

a. If yes, what leads you to believe it is hazardous waste? Check appropriate box:

/ / Company admits that its waste is hazardous during the inspection.

/X/ Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.

/ / The waste material is listed in the regulations as a hazardous waste from a nonspecific source (§261.31)

/ / The waste material is listed in the regulations as a hazardous waste from a specific source (§261.32)

/ / The material or product is listed in the regulations as a discarded commercial chemical product (§261.33)

/ / EPA testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report)

/X/ Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

Facility claims waste inks as non-hazardous (see attached) however waste tub wash is hazardous K086.

	YES	NO	DON'T KNOW
b. Is there reason to believe that there are hazardous wastes on-site which the company claims are merely products or raw materials?	X		

Please explain:

- waste Inks may be hazardous waste; company claims that this material is not hazardous. Inks intended to be reworked may be waste.

c. Identify the hazardous wastes that are on-site, and estimate approximate quantities of each.

Approx. 21 drums 55 gallon capacity - K086 - tub wash water waste NaOH solution.
5 drums 55 gallon capacity - pigments from air pollution
4 drums 55 gallon capacity - wst. Ink collection bag.
500 gal. waste ink storage tank.

d. Describe the activities that result in the generation of hazardous waste.

1) Washing of tubs containing inks with caustic → K086, facility has recently stopped using tub washer and does not generate this waste anymore. nly-similar flour ~~wash waste~~
2) off-spec ink, 3) bag collection solids (pigment dust).

	YES	NO	DON'T KNOW
(2) Is hazardous waste stored on site?	X		

a. What is the longest period that it has been accumulated?

Mr. Edelman is not sure what the longest period of storage was.

	YES	NO	DON'T KNOW
b. Is the date when drums were placed in storage marked on each drum?		X	
(3) Has hazardous waste been shipped from this facility since November 19, 1980?	X		

a. If "yes," approximately how many shipments were made?

35

(4) Approximately how many hazardous waste shipments off site have been made since November 19, 1980?

35

	YES	NO	DON'T KNOW
a. Does it appear from the available information that there is a manifest copy available for each hazardous waste shipment that has been made?		X	

Prior to 11-34-80 facility did not manifest waste ink.

b. If "no" or "don't know," please elaborate.

All materials (inks) have been manifested since 11-34-80

	YES	NO	DON'T KNOW
c. Does each manifest (or a representative sample) have the following information?			
- a manifest document number			
- the generator's name, mailing address, telephone number, and EPA identification number	X		
- the name, and EPA identification number of each transporter	X		
- the name, address and EPA identification number of the designated facility and an alternate facility, if any:	X		
- a description of the wastes (DOT)		X	
- the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle	X		improper DOT shp. name
- a certification that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation under regulations of the Department of Transportation and the EPA	X		

73 (5/22/81) name

76 (6/17/81)

3) NJD00171918 (2/18/81) no facility name

description varies (i.e. Dirty oil, Waste oil NOS)

	YES	NO	DON'T KNOW
Are there any hazardous wastes stored on site at the time of the inspection?	X		
If "yes," do they appear properly packaged (if in containers) or, if in tanks, are the tanks secure?	X	X	
If not properly packaged or in secure tanks, please explain.			

uncovered drums, spills

Most drums were properly labeled and packaged.

...n, plant manager stated that the 2 unlabeled drums were completed today.

	YES	NO	DON'T KNOW
Are containers clearly marked and labelled?		X	
Do any containers appear to be leaking?		X	
If "yes," approximately how many?			

Most are labeled 2 will be labeled today + dated.

4 unlabeled drums Mr. ...awn stated was waste black ink were noted.

*(6) Has the generator submitted an annual report to EPA covering the previous calendar year? N/A

a. How do you know?

(7) Has the generator received signed copies (from the TSD facility) of all manifests for wastes shipped off site more than 35 days ago? X

a. If "no," have Exception Reports been submitted to EPA covering these shipments? Will submit report to EPA in near future. X

)0005528 (11/24/80) 3) NJ 0005550 (12/10/80)
0005535 (1/27/81) 4) NJ 6027870 (4/6/81) 5) NJ0027871 (4/6/81) no Gen. reciept.

(8) General comments.

US Printing Ink is a manufacturer of news paper inks. Their main product is black newspaper ink. processes include blending and dispearcing pigments. Colored inks are produced for the comic sections of news paper. Colored ink pigments contain metals, such as lead, cromium, and barium. All inks contain an oil or varnish base.

Wastes produced include off spec inks, sodium hydroxide (NaOH) wash waste, and pigments from air pollution collection bags. USPI does not consider its black ink as a hazardous waste. NaOH wash waste was produced from cleaning mixing tubs in pot washer. This device is not used any more (as of 1 month ago), mixing tubs are cleaned out with rags which are returned to cleaning Company. Approximatly 1 drum of NaOH was produced per month. Waste Ink samples were analyzed for EP toxicity by USPI and were not exceeding the established limits (analysis is attached)

Manifest check indicated that USPI manifested waste ink off site starting 11-24-80. manifests indicated that this material was listed as oil not waste Ink; Facilities that accepted this material were Oil Recovery Clayton, NJ, Noble oil, NJ. and Casie Enterprise, NJ.

* The effective date for this requirement is March 1, 1982.

All of these facilities are not permited by NJDEP to recieve waste inks. Some manifests (3) did not contain the name of the facility

Observations and/or Other Comments

that the waste material was going to be disposed at. Some manifest #'s include NJ0005550 (12/10/80), NJ0005538 (11/24/80) to Noble. Mr. Edelman stated that USPI does not accept waste from it's customers, however, on a 9-14-81 visit to USPI Mr. Schmidt and Baker stated that they did take waste inks from customers and did not remember the company names.

Facility inspection indicated that one (1,000 gal) tank was ½ filled with black ink recently filled from drums. This will be removed within one week. Twenty four drums of hazardous waste (21 NaOH; 3 pigments) were noted in specified storage area. Forty unlabeled drums of off spec inks intended to be reworked were also noted. Two drums labeled Dry waste in crayon without accumulation dates were noted. These drums will be labeled and dated today. Two 35 gallon drums were also not labeled. Four unlabeled drums of waste black ink were noted next to the 2 waste ink tanks. Pails and drums without tops were noted next to the waste ink tanks overflowing from rain water onto the soil. Five additional drums of waste black ink and water were noted near the stream in rear of facility. Only one of these drums were labeled. Other drums containing inks were noted uncapped and have collected water.

General housekeeping in rear of facility was poor. Spills were noted throughout the lot on soil. Spills were green, blue, and red. Some black sludges were also noted on soil. Spills were being spread by rain water. USPI has plans to cover all spilled

Inspector's Signature

Facility Operator's Signature

Observations and/or Other Comments

material with stone, rather than remove contaminated soils. This is due to this material being considered a solid waste by USPI.

Nine photographs of spills and poor housekeeping practices were taken. Samples of ink material was taken at a previous DEP investigation.

Inspector's Signature

Facility Operator's Signature

REFERENCE NO. 4

HAZARDOUS WASTE INVESTIGATION

Inspector: Alphonse Iannuzzi Date: 10/31 and 11/11/80

Location: United States Printing Ink

St: 343 Murray Hill Parkway

Town: East Rutherford

County: Bergen

Lot: 4C Block: 106A

Origin of Complaint:

Complaint: Investigate waste storage, disposal practices, mixing of waste for use as fuel supplement.

Findings:

On the above dates I investigated US Printing Ink (USPI) at the above address. Information was supplied mainly by Mr. Hawn, Production Manager. Contact was made with Mr. Edelman, Vice President of operations, and Mr. Leiner, Chief Engineer. USPI is a division of Mill Master Onyx and is affliiated with Gulf Oil Co.

USPI manufactures colored and black inks that have an oil and varnish medium. Pigments are mixed into the medium at the plant in mixing pots and roller mills (air pollution permits for mills and storage tanks are attached). A large part of their business is the production of newspaper ink called carbon black (approximately 60% oil). USPI occasionally handles inks that contain heavy metals. All mixing and preparing of inks is done inside the building. Product is sold in containers ranging from 5 gallon pails to bulk trucks (they own several tank trucks). USPI has a NPDES permit for discharging into Berry's Creek for non contact roller mill cooling water. This permit and a NJDEP water resources report concerning this discharge is attached.

Inside the process building is a pot cleaner used to wash out mixing containers. Mr. Hawn stated that the wash water is being collected in drums that are stored outside in the yard. In the back lot there is a large garbage compactor used for domestic waste. The roll off that contains this waste is owned by Zeppetelli Inc., Moonachie, NJ. Several small drums containing ink resin were noted in this roll off. Mr. Hawn was told that he would have to wash out all resin prior to disposal. He did not believe that he was subject to washing out the drums and declined to do so.

Also in the back lot there was approximately 200 drums of ink that Mr. Hawn said would be reworked. They were stacked 3 high and were located on a permiable surface. The housekeeping in this area was very poor. Many drums were in poor condition and were lacking tops. Precipitation could easily cause the material to overflow into a near by stream. Accumulated sludges were noted on the ground and on the drums. Directly behind the drum storage area was a dry stream bed. The vegetation inside the stream was stained black. Drums are stored right on the stream bank. Black sludge accumulation was noted on and next to the stream bank. This material was most likely generated from a drum. The lowest point of this stream contained a black liquid. A drainage pipe from this stream emptied into a larger stream that is a tributary to Berry's Creek. This stream contained a 6'x4' area of black liquid similar to black ink. It was contained by two screens and some absorbant. Mr. Hawn stated that the stream is periodically cleaned and the material is disposed of with domestic waste. Two waste ink tanks in the yard were noted. Mr. Hawn stated that this ink is hauled by Ned's Waste Oil, PO Box 375, Newton, NJ (201-383-2459). No special waste manifest was used for the shipping and disposal of this waste. Mr. Hawn was informed that this material must be accompanied with a special waste manifest and should be hauled by a registered special waste hauler to a registered facility. He was given a list of state approved facilities and a manifest.

Split samples were taken of the 1) stream with black material (A0333 & B0333), 2) composite sample of small stream with black liquid and black sludge next to stream (A0334 & B0334), 3) black ink from storage tank inside building (A0335 & B0335), and 4) a control sample of stream not containgin any black liquid approximately 10 yards down stream from the second screen (A0336 & B0336).

A small landfill in the marshes on USPI's property was noted. It consisted of large blocks of cement, paper and other domestic waste. Mr. Hawn stated that he did not know who dumped this material. Some tank trailers owned by USPI were noted north of this landfill. Some ink was spilled from one of the trailers. Only the north side of the facility contained a fence.

Mr. Hawn indicated that USPI has a warehouse in Carlstadt that will be closed down at the end of the year (1980). Waste ink is not burned as a fuel supplement since the boiler runs on gas. USPI did not think that the ink they handle is a hazardous material. I asked Mr. Edelman to send a list of the constituents in of all their inks, he declined to do so because he considered this perprietory information.

USPI has a quality control lab. They were compiling a drum of waste solvent. Mr. Hawn stated that this material is used to clean up spills inside of the building by placing it on rags.

Mr. Hawn was instructed to clean up any spills or accumulated sludge material immediately, not to dispose drums or any material that has contacted ink as domestic waste and to improve the drum storage area on 10/31/80. A return visit to USPI on 11/11/80 indicated very little change in conditions.

Alphonse Iannuzzi Jr.
Alphonse Iannuzzi

cc: Moxon Tan, Supervisor of Field Operations,
Passaic-Hackensak Basin Water Pollution Control.
Meadowlands Development Commission, Building Inspector.
NJDEP Water Resources, Region II.

Recommendations

Confidential

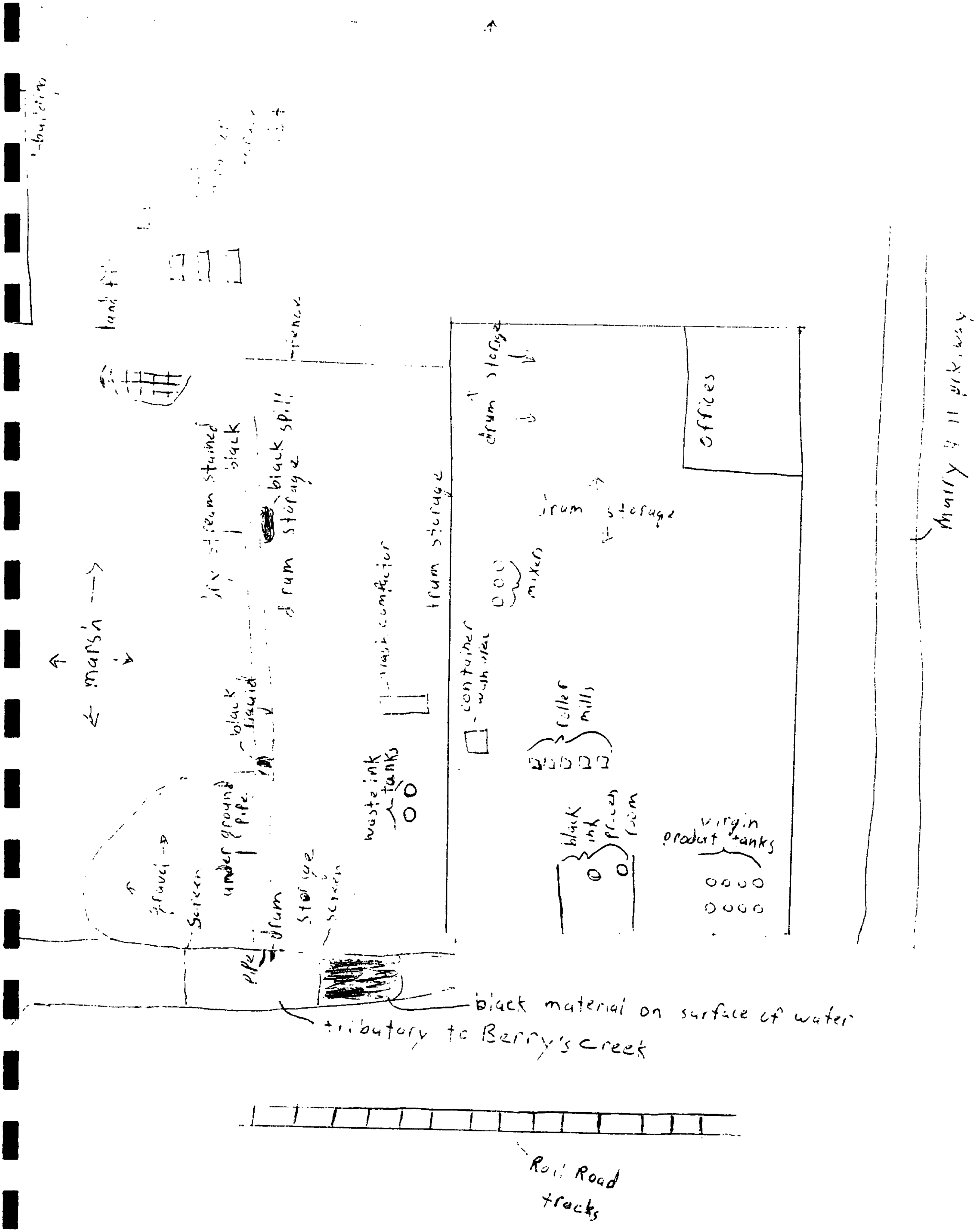
Investigation of USPI, E. Ruthford, indicated several environmental problems. It is highly recommended that USPI be issued a Notice of Prosecution for violation of NJAC 7:26-2.2.2(b) and 2.2.2(c) for disposing solid waste (landfill) and hazardous waste (accumulated sludges, spill into creek) without filing a registration statement to the Bureau and without first obtaining Department approval of the registration statement.

A NOP should also be issued to USPI for violation of NJAC 7:26-7.4(a) for not completing a special waste manifest for the shippment of waste ink off site. A NOP should be issued to Ned's Waste Oil, Newton, NJ for violation of NJAC 7:26-7.5(a) for hauling special waste without a manifest.

It is also recommended that a letter be sent to USPI from the Bureau stating that 1) clean up should start immediately (excavation of soil and gravel), 2) a list of constituents of their ink be sent to the Bureau immediately, 3) improvement of the drum storage area, preferably a diked cement pad with a sump and cementing of the storage lot, be enacted (I spoke with the building inspector of the Meadowlands Development Commission and he stated that this would be permitted), 4) a fence should be placed around the storage lot. Any material that comes in contact with ink should not be disposed of with domestic waste (i.e. drums containing ink resin in roll off). A follow up investigation within 4 months should be enacted.

Alphonse Iannuzzi Jr.

Alphonse Iannuzzi


offices
drum storage
drum storage
mixers
roller mills
container wash area
virgin product tanks
black ink process room
waste ink tanks
trash compactor
drum storage
drum storage
black spill
dry stream stained black
fence
marsh
black liquid
underground pipe
gravel
screen
drum storage
screen
pipe
black material on surface of water
tributary to Berry's Creek
Rail Road tracks

Form DWR-053
4/78

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
P.O. Box 2809 Trenton, N.J. 08625

DISCHARGE SURVEILLANCE REPORT

PERMIT #: NJ 000 3646 NO. OF DISCHARGES: one (1) CLASS: MIN - IND.

DISCHARGER: UNITED STATES PRINTING INK CORP.

OWNER: Sub. of Millmaster Onyx Corp

MUNIC: East Rutherford COUNTY: Bergen WATERSHED CODE: H

LOCATION: 343 Murray Hill Parkway

RECEIVING WATERS: Storm sewer → Berry's Creek STREAM CLASS: FW - 3

LIC. OPERATOR & PLANT CLASS: "NA"

TRAINEE/ASST: "NA" OTHER INFO: (201) 933 - 7100

MAJOR DEFICIENCIES NOTED:

-NONE -

OVERALL RATING: [x] Acceptable [ ] Conditionally Acceptable [ ] Unacceptable

EVALUATOR: ARMANDO A. ARCENAL TITLE: ASST. ENV'L. ENG'R.

INFORMATION FURNISHED BY: (name) WILLIAM DUNPHY

(title) ANALYTICAL GROUP LEADER (organization) U.S. Printing Ink Corp.

DATE OF INSPECTION: Jan. 16, 1980

N.J.D.E.P.
D.W.R.
DISCHARGE SURVEILLANCE REPORT

Permit #: NJ 0005646
Date: January 16, 1980

INDUSTRIAL TREATMENT PROCESS EVALUATION

= Satisfactory M = Marginal U = Unsatisfactory NA = Not Applicable

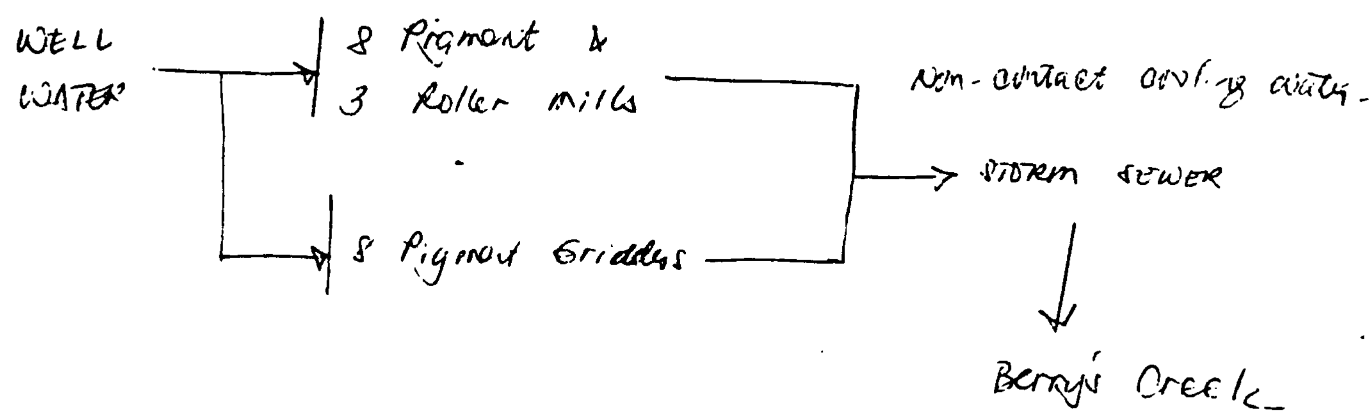
	RATING	COMMENTS
001	---	
RCE(S)	---	Non-contact cooling water from paint roller mill
OPERATION	---	16-hour operation / & grinder.
LOWS	-	
	-	
	-	
R SUPPLY	-	
		Filter water intake through small mesh filter.
	S	residues & solids carted by Zeppetelli, Moonachie
RDER	NA	
	S	
ES	S	
D BY	S	AQUA ASSOCIATES INC., West Caldwell
oduct	-	Printing inks for newspapers, magazine, etc.
employees	-	100 (2 shifts)
EARENCE	S	Clear
RENCE	S	Clear

DWR-053

N.J.D.E.P.
D.W.R.
DISCHARGE SURVEILLANCE REPORT

Permit #: NJ 0003646
Date: Jan 16, 1976

PLANT DIAGRAM AND FLOW SEQUENCE: 001



SAMPLING PERIOD: ______ COMPOSITE INTERVAL: NONE

DISCHG	PARA	SAMPLE TYPE	PERMIT LIMITS	SAMPLE RESULT	DISCHG	PARA	SAMPLE TYPE	PERMIT LIMITS	SAMPLE RESULT
	— NO SAMPLES TAKEN —								

#14

Permit No. NJ 0003646

MAY 18 1979

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et seq; the "Act"),

United States Printing Ink., Corporation

is authorized to discharge from a facility located at

343 Murray Hill Parkway
East Rutherford, New Jersey 07073

to receiving waters named

Berry's Creek

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on August 1, 1979.

This permit and the authorization to discharge shall expire at midnight, August 1, 1983.

By authority cf Eckardt C. Beck, Regional Administrator.

Signed this 14 day of May 1979

Meyer Scolnick, Director
Enforcement Division

Form VEM-025 T
1/79

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF AIR POLLUTION CONTROL

PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT AND CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT (5 YEAR DIRECT)

Permit and Certificate Number 0 4 3 6 4 4

DEP Plant ID 0 0 7 0 5

(Mailing Address)

United States Printing Ink
343 Murray Hill Parkway
E. Rutherford, N.J. 07073

(Plant Location)

(Same)
Bergen County

Applicant's Designation of Equipment St. Tank #3 Varnish Ink

N.J. Stack No. 0 0 1 No. of Stacks 0 1 No. of Sources 0 0 1

Approval 8 (Mo.) 3 (Day) 79 (Year) Start Up ___ (Mo.) ___ (Day) ___ (Year) Expiration 8 (Mo.) 3 (Day) 84 (Year)

THIS PERMIT AND PERMANENT (5 YEAR) CERTIFICATE IS BEING ISSUED UNDER THE AUTHORITY OF CHAPTER 106, P.L. 1967 (N.J.S.A. 26:2C-9.2), AND IS BEING ISSUED WITHOUT A FIELD INSPECTION. HOWEVER, FIELD INSPECTIONS ARE SCHEDULED FOR THE FUTURE AND APPROPRIATE ACTIONS WILL BE TAKEN IF SUCH INSPECTIONS DISCLOSE DEVIATIONS FROM YOUR APPLICATION.

YOU MAY BE ENTITLED TO AN EXEMPTION OF TAXATION IF YOUR EQUIPMENT IS TAXED AND IS CONSIDERED TO BE AN AIR POLLUTION ABATEMENT FACILITY. A TAX EXEMPTION APPLICATION MAY BE OBTAINED FROM THIS SECTION.

IF IT IS NECESSARY TO AMEND YOUR EMERGENCY STANDBY PLANS, PLEASE CONSULT WITH THE APPROPRIATE FIELD OFFICE. (SEE OTHER SIDE)

QUESTIONS ABOUT THIS DOCUMENT SHOULD BE DIRECTED TO THE PERMITS AND CERTIFICATES SECTION AT 609 - 292 - 6716 OR THE ADDRESS BELOW.

NOTE: This document must be readily available for inspection at the source location.

Approved by: Gary Pierce Gary Pierce
Supervisor
Permits & Certificates Section

N.J. Department of Environmental Protection
Bureau of Air Pollution Control
CN-027
Trenton, New Jersey 08625

Form VEM-025 T
/79

AUG 22 1979

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF AIR POLLUTION CONTROL

PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT AND CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT (5 YEAR DIRECT)

Permit and Certificate Number 0 4 3 6 4 5 DEP Plant ID 0 0 7 0 5

(Mailing Address)

United States Printing Ink
343 Murray HillParkway
East Rutherford, N.J. 07073

(Plant Location)

(Same)
Bergen County

Applicant's Designation of Equipment St. #1 2 Roller Mills

N.J. Stack No. 0 0 2 No. of Stacks 0 1 No. of Sources 0 0 2

Approval 8 (Mo.) 3 (Day) 79 (Year) Start Up ___ (Mo.) ___ (Day) ___ (Year) Expiration 8 (Mo.) 3 (Day) 84 (Year)

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NOTE: **This document must be readily available for inspection at the source location.**

Approved by: Gary Pierce Gary Pierce
Supervisor
Permits & Certificates Section

N.J. Department of Environmental Protection
Bureau of Air Pollution Control
CN-027
Trenton, New Jersey 08625

Form VEM-025-T
1/79

AUG 22 1979

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF AIR POLLUTION CONTROL

PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT AND CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT (5 YEAR DIRECT)

Permit and Certificate Number 0 4 3 6 4 6   DEP Plant ID 0 0 7 0 5

(Mailing Address)

United States Printing Ink
343 Murray Hill Parkway
East Rutherford, N.J. 07073

(Plant Location)

(Same)
Bergen County

Applicant's Designation of Equipment St. #2 4 Roller Mills

N.J. Stack No. 0 0 3   No. of Stacks 0 1   No. of Sources 0 0 4

Approval 8 (Mo.) 3 (Day) 79 (Year)   Start Up ___ (Mo.) ___ (Day) ___ (Year)   Expiration 8 (Mo.) 3 (Day) 84 (Year)

THIS PERMIT AND PERMANENT (5 YEAR) CERTIFICATE IS BEING ISSUED UNDER THE AUTHORITY OF CHAPTER 106, P.L. 1967 (N.J.S.A. 26:2C-9.2), AND IS BEING ISSUED WITHOUT A FIELD INSPECTION. HOWEVER, FIELD INSPECTIONS ARE SCHEDULED FOR THE FUTURE AND APPROPRIATE ACTIONS WILL BE TAKEN IF SUCH INSPECTIONS DISCLOSE DEVIATIONS FROM YOUR APPLICATION.

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QUESTIONS ABOUT THIS DOCUMENT SHOULD BE DIRECTED TO THE PERMITS AND CERTIFICATES SECTION AT 609 - 292 - 6716 OR THE ADDRESS BELOW.

NOTE: This document must be readily available for inspection at the source location.

Approved by: Gary Pierce Gary Pierce
Supervisor
Permits & Certificates Section

N.J. Department of Environmental Protection
Bureau of Air Pollution Control
CN-027
Trenton, New Jersey 08625

REFERENCE NO. 5

Hazardous Waste Site Ranking System

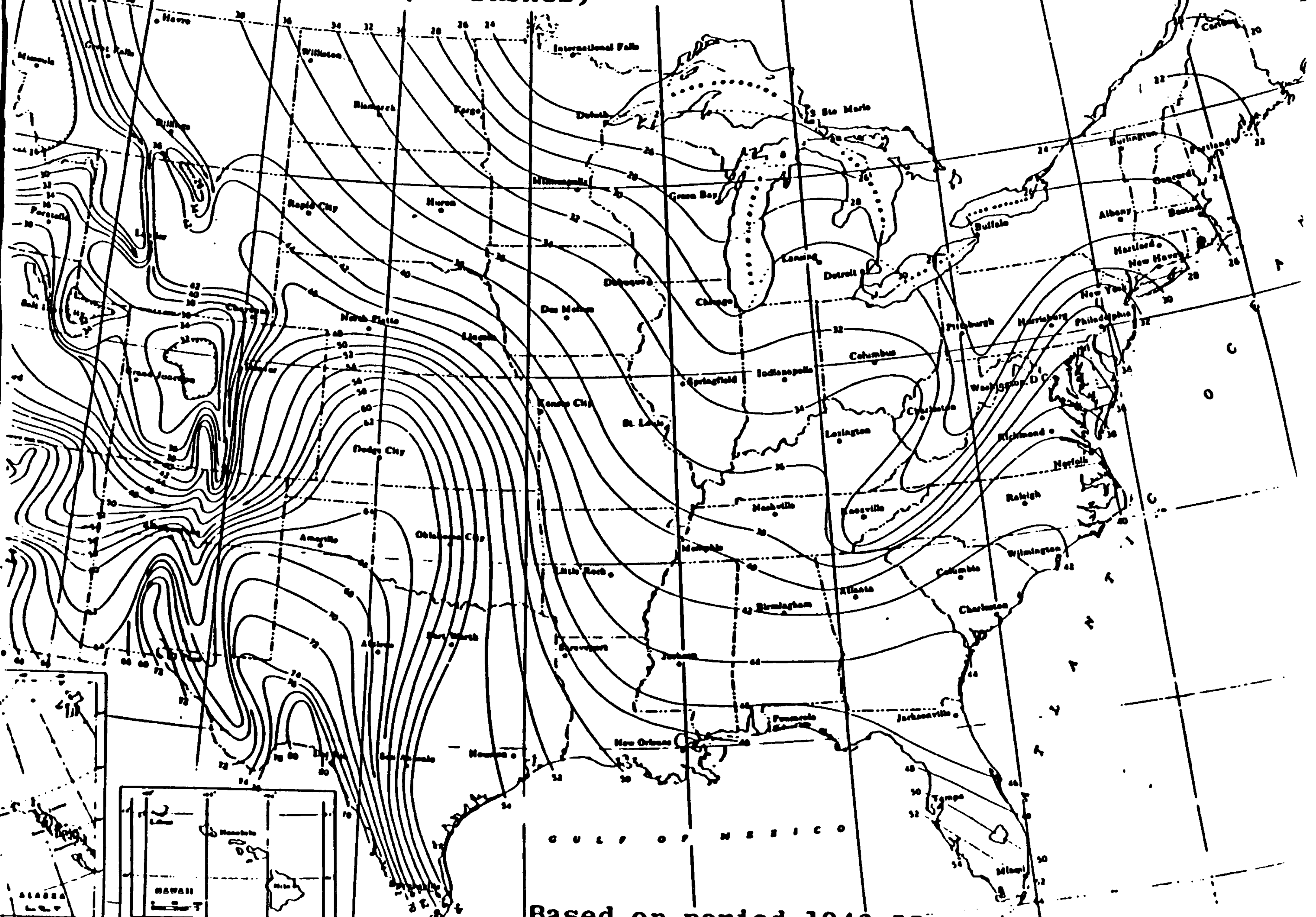
A Users Manual
(HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

MEAN ANNUAL LAKE EVAPORATION
(In Inches)



Based on period 1946-55

NORMAL ANNUAL TOTAL PRECIPITATION (Inches)

1 YEAR 24-HOUR RAINFALL (inches)

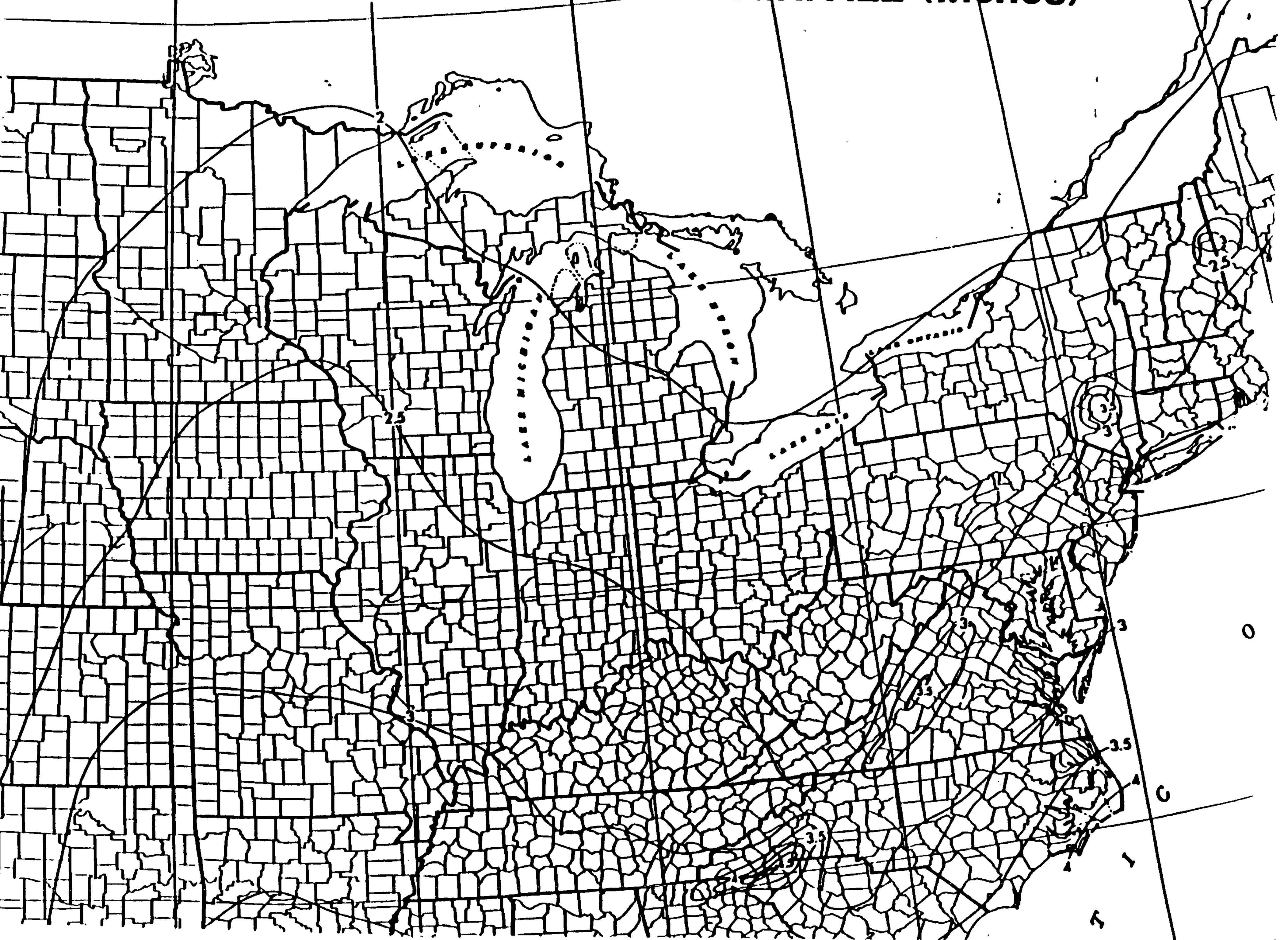


TABLE 2

PERMEABILITY OF GEOLOGIC MATERIALS*

Type of Material	Approximate Range of Hydraulic Conductivity	Assigned Value
Clay, compact till, shale; unfractured metamorphic and igneous rocks	$<10^{-7}$ cm/sec	0
Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till	$10^{-5} - 10^{-7}$ cm/sec	1
Fine sand and silty sand; sandy loams; loamy sands; moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till	$10^{-3} - 10^{-5}$ cm/sec	2
Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lavas; karst limestone and dolomite	$>10^{-3}$ cm/sec	3

*Derived from:

Davis, S. N., Porosity and Permeability of Natural Materials in Flow-Through Porous Media, R.J.M. DeWest ed., Academic Press, New York, 1969

Freeze, R.A. and J.A. Cherry, Groundwater, Prentice-Hall, Inc., New York, 1979

REFERENCE NO. 6

Date: ______
Company
By: ______
Date: ______
Contractor
By: ______
Date: ______

[FR Doc. 84-1432 Filed 1-23-84; 8:45 am]
BILLING CODE 6560-50-M

[OW-FRL-2460-3]

Brunswick Shale and Sandstone Aquifer of the Ridgewood Area, New Jersey; Final Determination

AGENCY: U.S. Environmental Protection Agency.

ACTION: Notice.

SUMMARY: Pursuant to Section 1424(e) of the Safe Drinking Water Act, the Administrator of the U.S. Environmental Protection Agency (EPA), has determined that the Brunswick Shale and Sandstone Aquifer, underlying the Ridgewood Area, is the sole or principal source of drinking water for Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey, and that the aquifer, if contaminated, would create a significant hazard to public health. As a result of this action, Federal financially assisted projects constructed in the Ridgewood Area and its streamflow source zone (upstream portions of Ho Ho Kus Brook and Saddle River Run drainage basins) will be subject to EPA review to ensure that these projects are designed and constructed so that they do not create a significant hazard to public health.

ADDRESSES: The data on which these findings are based are available to the public and may be inspected during normal business hours at the U.S. Environmental Protection Agency, Water Supply Branch, 26 Federal Plaza, New York, New York 10278.

FOR FURTHER INFORMATION CONTACT: Damina J. Duda, Water Supply Branch, 26 Federal Plaza, New York, New York 10278 (212) 264-1800.

SUPPLEMENTARY INFORMATION: Notice is hereby given that pursuant to Section 1424(e) of the Safe Drinking Water Act (42 U.S.C., 300f, 300h-3(e), Pub. L. 93-523), the Administrator of the U.S. Environmental Protection Agency (EPA) has determined that the Brunswick Shale and Sandstone aquifer of the Ridgewood Area is the sole or principal source of drinking water for Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey. Pursuant to Section 1424(e), Federal financially assisted projects constructed in the Ridgewood Area and its streamflow source zone (upstream portions of Ho Ho Kus Brook, and

Saddle River Run drainage basins) will be subject to EPA review.

I. Background

Section 1424(e) of the Safe Drinking Water Act state:

(e) If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register. After the publication of any such notice, no commitment for Federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for Federal financial assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.

On July 4, 1979, the Committee to keep Our Water Pure petitioned EPA to designate the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area as sole source aquifer. On January 15, 1980, EPA published a notice in the Federal Register announcing a public comment period and setting a public hearing date. A public hearing was conducted on February 28, 1980, and the public was allowed to submit comments on the petition until March 28, 1980.

II. Basis for Determination

Among the factors to be considered by the Administrator in connection with the designation of an under Section 1424(e) are: (1) Whether the aquifer is the area's sole or principal source of drinking water, and (2) whether contamination of the aquifer would create a significant hazard to public health.

On the basis of information available to this Agency, the Administrator has made the following findings, which are the basis for the determination noted above:

1. The Brunswick Shale and Sandstone Aquifer of the Ridgewood Area is the "sole source" of drinking water for the approximately 68,820 residents of Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey.

2. There is no existing alternative drinking water source or combination of sources which provides fifty percent or more of the drinking water to the designated area.

3. The Brunswick formation is a soft red shale interbedded with coarse grained sandstone. The aquifer is overlain by permeable unconsolidated glacial and recent deposits. As a result of permeable soil characteristics, the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area is highly susceptible to contamination through its recharge zone from a number of sources, including but not limited to, chemical spills, leachate from landfills, stormwater runoff, highway deicers, faulty septic systems, wastewater treatment systems, and waste disposal lagoons. The aquifer is also susceptible to contamination to a lesser degree from the same sources, through its streamflow source zone. Since ground water contamination can be difficult or impossible to reverse and since the aquifer in this area is solely relied upon for drinking water purposes by the population of the Ridgewood Area, contamination of the aquifer could pose a significant hazard to public health.

III. Description of the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area, Its Recharge Zone and Its Streamflow Source Zone

The Brunswick Shale and Sandstone Aquifer is a soft red shale interbedded with coarse grained sandstone. The formation, located in northern New Jersey, is fairly large, extending south into Pennsylvania and north into New York. Igneous intrusions which form the Watchung Mountains and the Palisades, also form the western and eastern boundaries of the Burnswick formation, respectively. The area in which Federal financially assisted projects will be subject to review is the portion of the Brunswick Shale and Sandstone Aquifer in the Ridgewood Area, its streamflow source zone, and its recharge zone.

For the purposes of this designation, the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area is considered to include the entire municipalities of Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey. It's recharge zone is considered to be one and the same with this area. The streamflow source zone is that portion of the drainage basins of Ho Ho Kus Brook and Saddle River Run located upstream of the Ridgewood area. This includes all or a portion of the following New Jersey municipalities: Waldwick, Allendale, Ramsey, Mahwah, Franklin Lakes, Ho Ho Kus, Saddle River, Upper Saddle River, Woodcliff Lake, Hillside, Washington, Montvale, as well as Ramapo Township, New York.

IV. Information Utilized in Determination

The information utilize in this determination includes the petition, written and verbal comments submitted by the public, and various technical publications. The above data is available to the public and may be inspected during normal business hours at the U.S. Environmental Protection Agency, Region II, Water Supply Branch, 26 Federal Plaza, New York, New York 10278.

V. Project Review

EPA Region II is working with the Federal agencies that may in the future provide financial assistance to projects in the area of concern. Interagency procedures have been developed through which EPA will be notified of proposed commitments by Federal agencies for projects which could contaminate the Brunswick Shale and Sandstone Aquifer, upon which the Ridgewood Area is dependent for its sole source water supply. EPA will evaluate such projects and, where necessary, conduct an in-depth review, including soliciting public comments where appropriate. Should the Administrator determine that a project may contaminate the aquifer through its recharge zone so as to create a significant hazard to public health, no commitment for Federal financial assistance may be entered into. However, a commitment for Federal financial assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.

Although the project review process cannot be delegated, the U.S. Environmental Protection Agency will rely to the maximum extent possible on any existing or future State and local control mechanisms in protecting the ground water quality of the Brunswick Shale and Sandstone Aquifer on which the Ridgewood Area is dependent for its sole source water supply. Included in the review of any Federal financially assisted project will be coordination with the State and local agencies. Their comments will be given full consideration and the Federal review process will attempt to complement and support State and local ground water protection mechanisms.

VI. Summary and Discussion of Public Comments

Most comments were generally in favor of designation. Two local governments submitted resolutions in support of designation. Only two commenters expressed any reservations regarding the designation.

One commenter expressed concern that the proposed designation would provide protection which is duplicative of State and local controls and may lead to unnecessary bureaucratic delays of projects. Although a number of ground water protection measures are available at the Federal, State and local level, none of these, either, individually or collectively, permit EPA to act as directly as would a sole source designation in the review and approval of Federal financially assisted projects. In addition, EPA feels that the sole source project review process will foster integration rather than duplication of environmental review efforts. Memoranda of Understanding have been negotiated with various Federal agencies, with the purpose of streamlining the review process and minimizing project delays.

One commenter expressed concern that the area proposed for sole source designation could be an arbitrary political subdivision of the larger Brunswick aquifer system. The commenter questioned whether sufficient consideration had been given to the physical limits of the hydrologic system. The EPA recognizes that the aquifer does indeed cover a large area. However, a significant portion of the population in these other areas utilize other sources of water supply or have alternative sources available.

Concern was also raised that the Ridgewood Area may have alternative water supply available through adjacent water purveyors: specifically, the Passaic Valley Water Commission or the Hackensack Water Company. EPA has reviewed this matter and determined that either insufficient supply is currently available (in one case) or interconnections between the Ridgewood Area and the purveyor are currently not adequate to handle the Area's demand. Furthermore, the Brunswick Shale and Sandstone Aquifer in the Ridgewood Area is a source of water for export to adjacent purveyors during drought conditions.

The area considered for designation was determined to meet the criteria of an area which depends upon an aquifer for its sole or principal drinking water source and which, if contaminated, would pose a serious threat to the health of the Ridgewood Area residents.

VII. Economic and Regulatory Impact

Pursuant to the provisions of the Regulatory Flexibility Act (RFA), 5 U.S.C. 605(b), I hereby certify that the attached rule will not have a significant impact on a substantial number of small entities. For purposes of this Certification the "small entity" shall have the same meaning as given in Section 601 of the RFA. This action is only applicable to the Ridgewood Area.

The only affected entities will be those Area-based businesses, organizations or governmental jurisdictions that request Federal financial assistance for projects which have the potential for contaminating the aquifer so as to create a significant hazard to public health. EPA does not expect to be reviewing small isolated commitments of financial assistance on an individual basis, unless a cumulative impact on the aquifer is anticipated; accordingly, the number of affected small entities will be minimal.

For those small entities which are subject to review, the impact to today's action will not be significant. Most projects subject to this review will be proceded by a ground water impact assessment required pursuant to other Federal laws, such as the National Environmantal Policy Act, as amended (NEPA), 42 U.S.C. 4321, et seq. Integration of those related review procedures with sole source aquifer review will allow EPA and other Federal agencies to avoid delay or duplication of effort in approving financial assistance, this minimizing any adverse effect on those small entities which are affected. Finally, today's action does not prevent grants of Federal financial assistance which may be available to any affected small entity in order to pay for the redesign of the project to assure protection of the aquifer.

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. This regulation is not major because it will not have an annual effect of $100 million or more on the economy, will not cause any major increase in costs or prices, and will not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States enterprises to compete in domestic or export markets. Today's action only affects the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area. It provides an additional review of ground-water protection measures, incorporating State and local measures whenever possible, for only those projects which request Federal financial assistance.

Dated: January 12, 1983.

William D. Ruckelshaus,

Administrator.

[FR Doc. 84-1887 Filed 1-23-84; 8:45 am]

BILLING CODE 6560-50-M

REFERENCE NO. 7

THE LATEST TRIASSIC AND EARLY JURASSIC FORMATIONS OF THE NEWARK BASIN (EASTERN NORTH AMERICA, NEWARK SUPERGROUP): STRATIGRAPHY, STRUCTURE, AND CORRELATION

PAUL E. OLSEN

Bingham Laboratories, Department of Biology
Yale University
New Haven, Connecticut 06520

ABSTRACT. *Newark Supergroup deposits of the Newark Basin (New York, New Jersey, and Pennsylvania) are here divided into nine formations called (from the bottom up): Stockton Formation (maximum 1800 m); Lockatong Formation (maximum 1150 m); Passaic Formation (maximum 6000 m); Orange Mountain Basalt (maximum 200 m); Feltville Formation (maximum 600 m); Preakness Basalt (maximum +300 m); Towaco Formation (maximum 340 m); Hook Mountain Basalt (maximum 110 m); and Boonton Formation (maximum +500 m). The latter seven formations are new and result from subdividing the Brunswick Formation and Watchung Basalt of Kümmel and Darton. Each formation is characterized by its own suite of lithologies, the differences being especially obvious in the number, thickness, and nature of their gray and black sedimentary cycles (or lack thereof).*

Newark Basin structure still escapes comprehensive understanding, although it is clear that faults (predominantly normal) and onlaps bound both the eastern and western edges of the basin. The cumulative thickness of formations and the apparent movement of the faults is greater on the western than the eastern side, however.

Fossils are abundant in the sedimentary formations of the Newark Basin and provide a means of correlating the sequence with other early Mesozoic areas. The Stockton, Lockatong, and most of the Passaic Formation are Late Triassic (?Middle and Late Carnian — Rhaetic) while the uppermost Passaic Formation (at least locally) and younger beds appear to be Early Jurassic (Hettangian and Sinemurian) in age. The distribution of kinds of fossils is intimately related to sequences of lithologies in sedimentary cycles.

Manuscript received 2 Jan 1980.
Manuscript accepted 14 Jan 1980
Revised manuscript received 16 Sep 1980.

INTRODUCTION

Despite well over a century of interest in the early Mesozoic Newark Supergroup of eastern North America, many fundamental aspects of its historical and structural geology remain unexplored. In part, this is due to the complexity of stratigraphic and structural relations in the individual basins, coupled with the rarity of continuous exposures. As a result, much of our accepted understanding of the Newark Supergroup has been based on incomplete observations and opinion. The purpose of this paper is to provide a more thorough observational foundation against which past hypotheses may be assessed and on which future work may be based. Emphasis is placed on the younger beds of the Newark Basin, for they have never been examined in detail, and a new stratigraphic framework is proposed. These younger Newark Basin beds provide us with a key to understanding the entire basin column, which in turn is crucial to the context in which early Mesozoic organic evolution, continental sedimentation, and tectonic development are to be studied.

REGIONAL SETTING

Triassic and Jurassic Newark Supergroup rocks (Figure 1) (Olsen, 1978; Van Houten, 1977) occupy numerous elongate basins in eastern North America and consist of predominantly detrital fill locally more than 10,000 m thick. In most

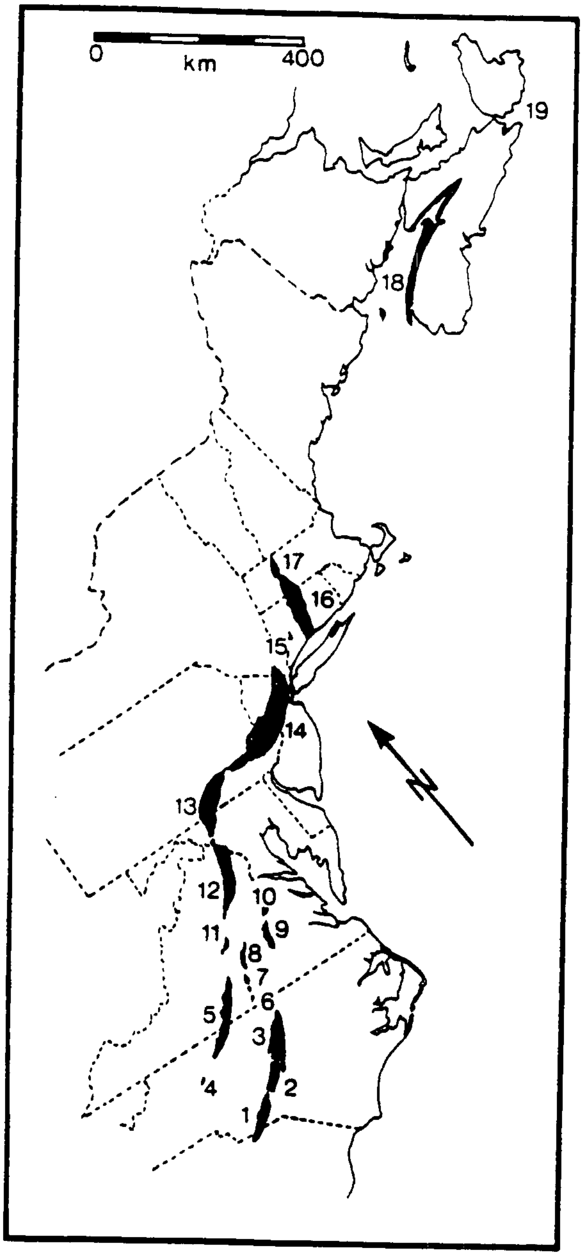


FIG. 1. Newark Supergroup deposits exposed in eastern North America: 1. Wadesboro Basin of Chatham Group; 2. Sanford Basin of Chatham Group; 3. Durham Basin of Chatham Group; 4. Davie County Basin; 5. Dan River — Danville Basins of Dan River Group; 6. Scottsburg Basin; 7. Basins south of the Farmville Basin; 8. Farmville Basin. 9. Richmond Basin; 10. Taylorsville Basin; 11. Scotsville Basin; 12. Culpeper Basin (Culpeper Group; 13. Gettysburg Basin; 14. Newark Basin; 15, Pomperaug Basin; 16. Hartford Basin; 17. Deerfield Basin; 18. Fundy Basin (Fundy Group); 19. Chedabucto Basin (= Orpheus Graben?). Data primarily from Calver, 1963, King, *et al.*, 1944; Van Houten, 1977; and Olsen, 1978.

areas, red clastics are the dominant sedimentary rocks and tholeiitic, intrusive and extrusive diabases and basalts are the most common volcanics. These unconformably overlie (or rarely intrude) Precambrian and Palaeozoic rocks and are overlain by post-Jurassic rocks of the Coastal Plain, or alluvium and soils.

The Newark Basin is the most northerly of three Newark Supergroup basins lying in an arcuate belt stretching from southern New York to central Virginia (Figure 2). The region has attracted the attention of researchers since the beginnings of North American geological work (Kalm, 1753-1761; Schopf, 1783-1784); by about 1890 the deposit had been mapped out (Lyman, 1895; Cook, 1868) and by 1900 the currently used rock-stratigraphic framework was established (Table 1). Kümmel (1897) divided the Newark Basin sequence into three formations: the Stockton, Lockatong, and Brunswick. As recognized by Kümmel, the Stockton Formation (maximum thickness 1800 m) is the basal deposit consisting of thick beds of buff or cream colored conglomerate and sandstone, and red siltstone and sandstone. Throughout the exposed central portion of the Newark Basin, Kümmel recognized the Lockatong Formation (maximum thickness 1150 m) which is made up of gray and black siltstone arranged, as later shown by Van Houten (1969), in distinctive sedimentary cycles (Figure 4). The youngest formation Kümmel called the Brunswick. Throughout the Newark Basin, the lower Brunswick consists of sandstone and conglomerate and clusters of laterally persistent cycles of gray and black siltstone similar to the Lockatong Formation (Kümmel, 1897, 1898; McLaughlin, 1943; Van Houten, 1969). The upper Brunswick, on the other hand, is made up of three major extrusive basalt sheets which Darton (1890) called the Watchung Basalt, two major interbedded sedimentary units, and a thick overlying sedimentary unit. The latter sedimentary sequences have escaped even preliminary lithologic description.

Field work by this author during the past few years has shown that Kümmel's Brunswick For-

FIG. 2. The Newark Basin. A. geologic map showing distribution of formations. conglomerate facies (irregular stipple). and major clusters of detrital cycles in Passaic Formation (black lines). Abbreviations of formations and intrusive bodies as follows: B. Boonton Formation: C. Coffman Hill Diabase: Cd. Cushetunk Mountain Diabase; F. Feltville Formation: H. Hook Mountain Basalt: Hd. Haycock Mountain Diabase: Jb. Jacksonwald Basalt. L. Lockatong Formation: O. Orange Mountain Basalt: P. Passaic Formation: Pb. Preakness Basalt: Pd. Palisade Diabase: Pk. Perkasie Member of Passaic Formation: Rd. Rocky Hill Diabase: S. Stockton Formation: Sd. Sourland Mountain Diabase: T. Towaco Formation.

B. Structural diagram of Newark Basin (note — parts of basin margin not mapped as faults should be regarded as onlaps. faults with teeth on downthrown side): a. Jacksonwald Syncline: b. Chalfont Fault: c. Hopewell Fault: d. Flemington Fault: e. Sand Brook Syncline: f. Flemington Syncline: g. Cushetunk Mountain Anticline: h. New Germantown Syncline: i. Somerville Anticline: j. New Vernon Anticline: K. Ladentown Syncline: l. Watchung Syncline: m. Ramapo Fault.

C. Geographic map of Newark Basin showing locations of type sections of formations proposed in this paper: a. type section of Passaic Formation: b. type section of Orange Mountain Basalt: c. type section of Feltville Formation: d. type section of Preakness Basalt: e. type section of Towaco Formation in Roseland. New Jersey: f. type section of Hook Mountain Basalt in Pine Brook. New Jersey; g. type section of Boonton Formation in Boonton. New Jersey: h. Lincoln Tunnel. Weehawken. New Jersey.

Data for A. B. and C from original observation and Kümmel. 1897. 1898: Lewis and Kümmel. 1910-1912: Darton. 1890. 1902: Darton *et al.*. 1908: Glaeser. 1963: Sanders. 1962: Van Houten. 1969: McLaughlin. 1941. 1943. 1944. 1945. 1946a. 1946b: Bascom *et al.*. 1909a. 1909b: Bailey *et al.*. 1914: Willard *et al.*. 1959: Manspiezer: pers. comm.

mation consists of a heterogenous mix of major units of differing and distinctive lithology. each as distinct and perhaps originally as widespread as the Stockton or Lockatong; further. each "Watchung Basalt" and the interbedded and overlying sedimentary beds are lithologically distinct from the lower Brunswick. In addition. Cornet, McDonald. and Traverse (1973). Cornet and Traverse (1975). Cornet (1977). and Olsen and Galton (1977) have shown that much of the upper Brunswick is Early Jurassic rather than Late Triassic as had been assumed. It now seems clear that these Jurassic rocks are in many ways different from the Late Triassic lower Brunswick, Lockatong, or Stockton formations. For these reasons, I propose the terms Brunswick Formation (Kümmel, 1897) and Watchung Basalt (Darton, 1890) be dropped and their components subdivided to form seven new formations (Table 1) in parallel with Lehmann's (1959) widely used divisions of the Hartford Basin and Klein's (1962) divisions of the Fundy Group in accord with the American Code of Stratigraphic Nomenclature and the International Stratigraphic

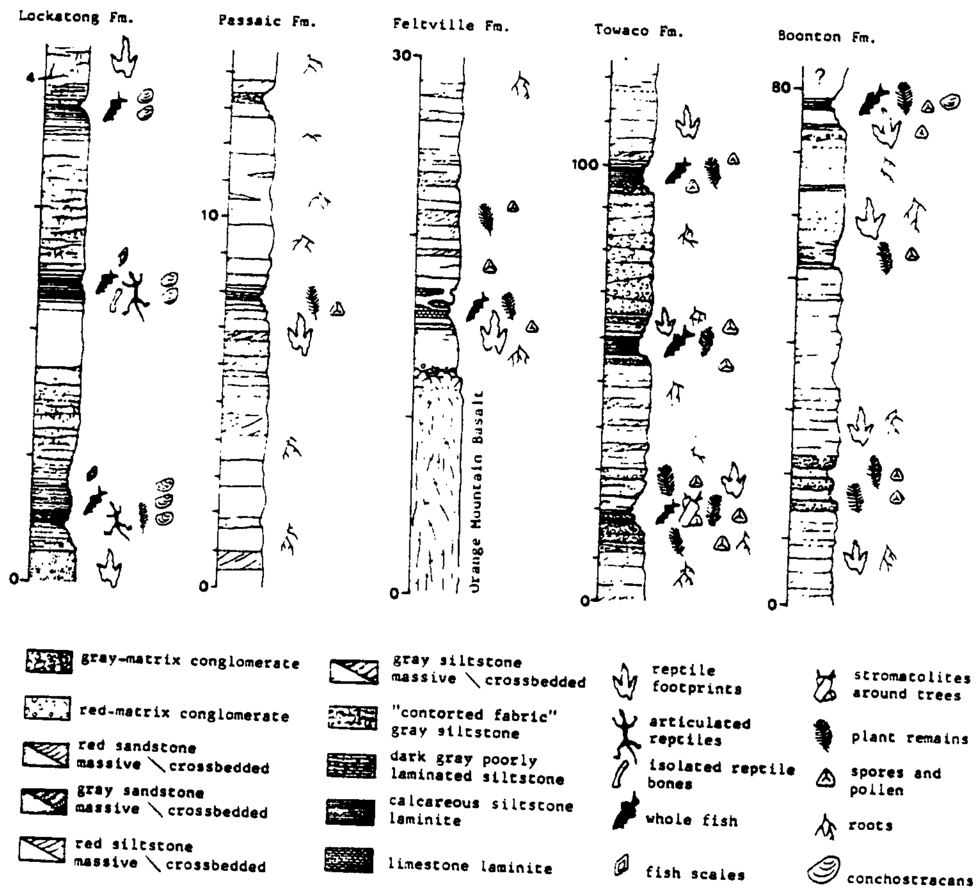


FIG. 3. Major types of sedimentary cycles of the formations of the Newark Basin. Note that the approximate center of the symbols for the major types of fossils is placed about where they occur in the section to the left. Note the change in scale (in meters) from section to section.

Lockatong Formation section measured at Kings Bluff, Weehawken, New Jersey, and represents three detrital cycles. The Passaic Formation section measured along Nishisakawick Creek and Little Nishisakawick Creek, northeast of Frenchtown, New Jersey; the two cycles shown represent the lower portion of McLaughlin's Graters Member (i.e., Member G) and are characteristic of most of the detrital cycles of the Passaic Formation. The upper cycle develops a dark gray siltstone a kilometer to the south. Feltville Formation section measured along East Branch of Middle Brook, Martinsville, New Jersey — there is only one such "cycle" in the Feltville Formation. Towaco Formation section measured along stream 2 km southwest of Oakland, New Jersey; three cycles are shown. Boonton Formation section is upper part of type section (see Figure 12); section not clearly cyclic.

Guide. In this way, nominal status is given to beds critical to the overall pattern of Newark Basin historical geology.

DESCRIPTIVE STRATIGRAPHY OF THE POST-LOCKATONG FORMATIONS

The Passaic Formation

The name Passaic Formation is proposed for the predominantly red siltstone, sandstone, and conglomerate which conformably overlie the Lockatong Formation and which underlie the Orange Mountain and Jacksonwald basalts. It is equivalent to the pre-basalt part of Kümmel's Brunswick Formation (Table 1). The type section (Figure 4) consists of intermittent exposures of red siltstone and sandstone along interstate Route 80 near Passaic, New Jersey (Figure 2 and Appendix).

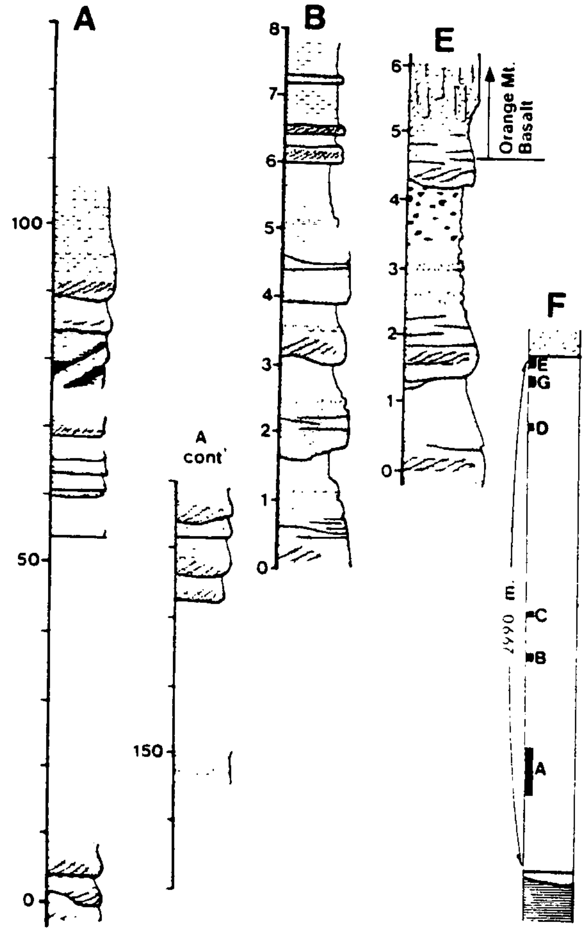


FIG. 4. A - E, type section of Passaic Formation (see Appendix for description); F, diagram showing positions of sections A - E in Passaic Formation.

As is the case for all Newark formations, the estimation of stratigraphic thicknesses in the Passaic Formation is hampered by the presence of a series of faults with variable amounts of dip-slip displacement cutting much of the Newark Basin. The exact distribution of these faults is poorly known and thus many trigonometrically computed thicknesses in the Passaic Formation are probably overestimations. This is especially true in the northern and southern portions of the Newark Basin. The field relationship of mapped gray siltstones in the central Newark Basin, however, shows that in broad areas these smaller faults are missing and the calculated stratigraphic thickness is probably correct (McLaughlin, 1943). Instead of a large number of small faults, the central Newark Basin is cut by several very large faults (Figure 2).

In spite of these mensuration problems, it is clear that the Passaic Formation is the thickest, coherent lithologic unit in the Newark Basin, reaching a maximum calculated stratigraphic thickness of over 6,000 m (Jacksonwald Syncline). The formation outcrops throughout the Newark Basin although its upper beds are preserved only in the Watchung Syncline (Figure 2), in the smaller synclines preserved along the eastern side of the Flemington Fault, and in the Jacksonwald Syncline. In all other areas, the upper Passaic Formation has been removed by post-Newark erosion.

While in most areas the Passaic Formation rests conformably on Lockatong Formation, in several areas on the western margin of the Newark Basin, the Passaic directly onlaps the step-faulted basement without any intervening Stockton or Lockatong. In these areas (see Figure 5), the thickness of upper Passaic Formation present below the Orange Mountain Basalt is comparatively slight. One area where these relationships can be clearly seen is near Cushetunk Mountain (Figure 5) in central New Jersey. In the New Germantown Syncline, the stratigraphic distance from the Palaeozoic basement to the Orange Mountain Basalt is about 800 m. Less than 30 km to the southwest, over 1,000 m of Passaic is

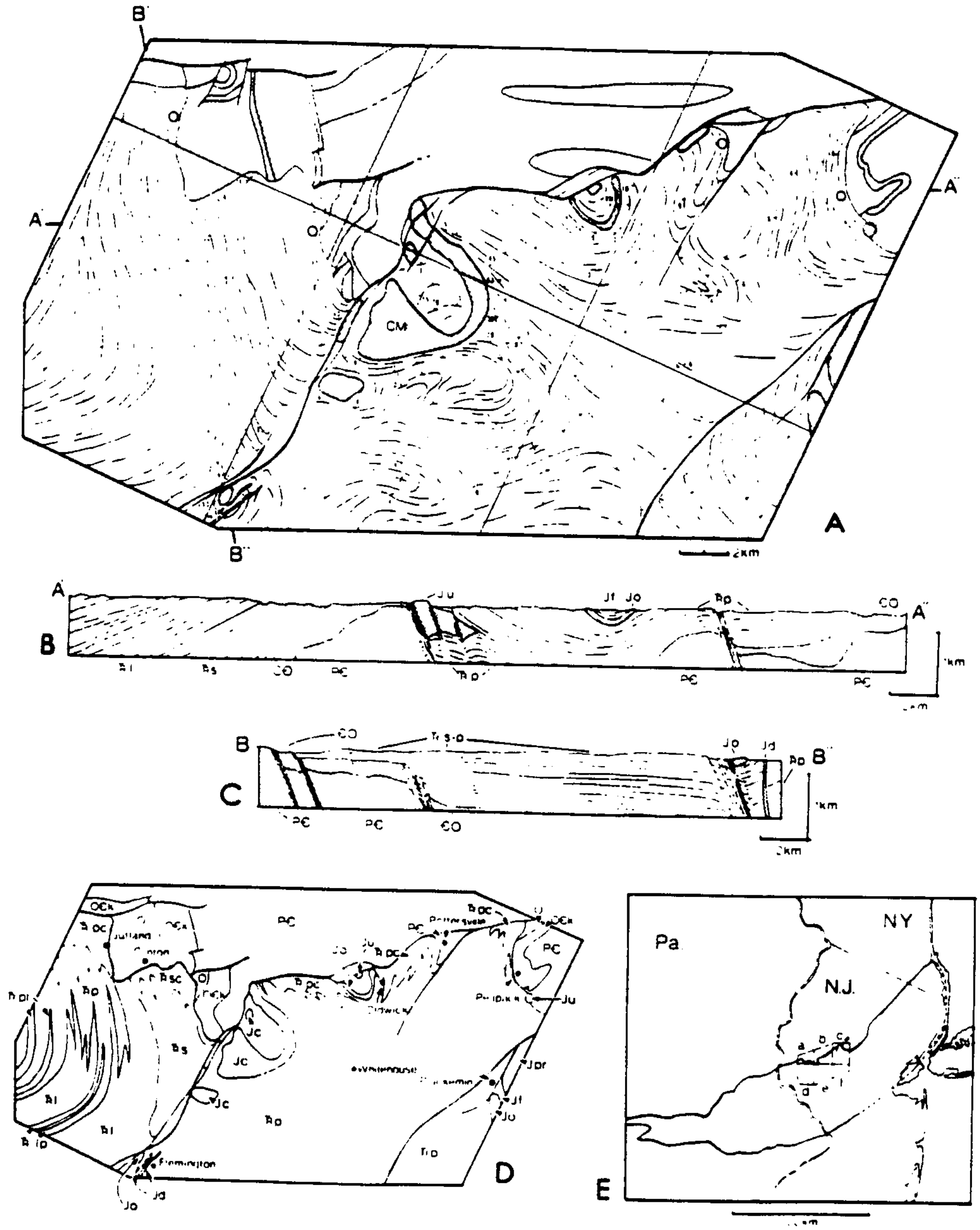


FIG. 5. Cushetunk Mountain area: A, map showing strike lines, degree of dip, major faults and onlaps (o) — diabase and basalt represented by dark gray shading while light gray shading represents Palaeozoic and PreCambrian basement rocks — CM is Cushetunk Mountain; B, cross section of area in A (above) along line A'-A" — note vertical exaggeration; C, section of area in A (above) along B'-B"; D, geologic map of Cushetunk Mountain area (Oek, Cambrian and Ordovician sedimentary rocks of the Kittatinny carbonate terrane) O, allochthonous peltic and minor carbonate rocks; eO, combined Oek and O; Pe, Precambrian crystalline rocks; T lp, tongues of Triassic Passaic Formation lithology within main mass of Lockatong Formation; T pc, Triassic Passaic Formation, conglomeratic facies; T p, Triassic Passaic Formation; T pl, Triassic Passaic Formation, Lockatong-like clusters of detrital sedimentary cycles; T s, Triassic Stockton Formation; T sc, Triassic Stockton Formation, a conglomeratic facies identical to T pc; JF, Jurassic Feltville Formation; Jc, Jurassic Cushetunk Mountain

present above 2,000 m of Stockton plus Lockatong, and in the latter area the top of the Passaic Formation is not preserved. In less well exposed areas, or where the strike parallels the basin margin, such onlap and step-faulted relationships cannot be observed without geophysical techniques or analysis of well records (McLaughlin, 1943, 1944; Dunleavy, 1975).

Facies patterns of the Passaic Formation are a modified continuation of those of the Lockatong, and different from all younger Newark Basin deposits. Laterally persistent and periodically spaced clusters of gray and black siltstone cycles characterize both formations, the Lockatong being composed almost entirely of such repetitive units (see Figure 3). According to Van Houten (1962, 1964, 1965, 1969), the great majority of the Lockatong cycles fall into two broad classes which he terms chemical and detrital (Figure 3). The most laterally continuous are detrital and these generally occur in bundles. Each bundle is separated from the next (in vertical succession) by a series of chemical cycles; the distance from the center of one detrital cycle bundle to the next being about 110-125 m in the central Newark Basin (Van Houten, 1969). This figure decreases to the basin margins. Chemical cycles are characterized by the presence of abundant analcime and are for the most part restricted to the center of the basin, giving way in all directions to red clastics. The lateral edges of the Lockatong thus consist of bundles of detrital cycles separated by red siltstone and sandstone. It follows that the boundary between the Passaic Formation and the Lockatong can be operationally defined (both horizontally and vertically) as where the thicknesses of beds of red clastics dominate gray and black. It further follows that where gray and black detrital cycle clusters do not occur, as in Rockland County, New York, the Passaic Formation rests directly on the Stockton.

Bundles of detrital cycles occur through most of the thickness of the Passaic Formation, periodically spaced, as in the Lockatong. The great majority of these cyclic non-red units, however, are not as laterally continuous as those of at least the lower Lockatong, and generally the number of cycles involved in these clusters decrease in frequency through the Passaic Formation. For the lower and middle Passaic, McLaughlin (1933, 1943, 1945, 1946, 1948) has succeeded in mapping out the distribution of these non-red units over most of the central Newark Basin. A detailed stratigraphic framework has developed around these beds, each detrital cycle bundle being designated by a letter (A, B, C, ...). The extension of McLaughlin's units outside of the areas he mapped is a principle aim of ongoing research (Figure 2).

The highest of McLaughlin's mapped units (134 m above members L and M) join with other cycles to the southwest to form a large body of gray and black siltstone called the Perkasie Member (McLaughlin, 1946). Unlike the Lockatong Formation, however, the thickest section of the Perkasie Member is in the southwestern portion of the Newark Basin rather than near its geographic center. Due to repetition by major faults (Figure 2) and changes in strike along folds, the broader aspects of the three-dimensional relationships of most Passaic dark clastic units can be observed. Looking over the bulk of the Passaic Formation (Figure 2), there is no evidence that the rest of the detrital cycle clusters of the Passaic (i.e., other than lateral equivalents of the Lockatong Formation or Perkasie Member) represent the remnants of a large, now eroded, gray and black siltstone body as Glaeser (1963) has suggested.

There are major masses of red-matrix conglomerate at both the northern and southern ends of the Newark Basin (Figure 2). These grade nearly imperceptively into the red clastics of the Passaic Formation and are here considered facies of it. Other much smaller areas of conglomerate occur along the western border of the Newark Basin; these are especially prevalent where Passaic

Diabase: Jd, Jurassic diabase dikes; Jo, Jurassic Orange Mountain Basalt; Jpr, Jurassic Preakness Mountain Basalt; Ju, Jurassic basalt, undefined; E, geographic position and quadrangle maps of Cushetunk Mountain area (a, High Bridge Quadrangle; b, Califon Quadrangle; c, Gladstone Quadrangle; d, Pittstown Quadrangle; e, Flemington Quadrangle; f, Raritan Quadrangle).

Formation onlaps basement rocks (Figures 2 and 5).

A point of general applicability to perhaps most Newark Supergroup deposits and particularly relevant to Passaic Formation conglomerates is the lack of objective lithologic distinction between basal and border conglomerates. The small bodies of conglomerate present along the western border of the Newark Basin (so called fanglomerates) have traditionally been interpreted as genetically related to the presence of border faults and the presence of such conglomerates was often used as evidence for the faults themselves (Russell, 1922; Barrell, 1915; Sanders, 1963; Van Houten, 1969). It appears from relations presented in Figure 5 and geophysical evidence (Dunleavy, 1975) that many of these "border conglomerates" are in fact basal (see Sanders, 1974 and Faill, 1973). Conglomerates present in the basal Stockton Formation in the same area (west of Cushetunk Mountain, Figure 5) are lithologically indistinguishable from these Passaic conglomerates. The relationship of these conglomerates to the inferred syndepositional topography of the basin is not at all obvious and, thus, for the present, interpretive designations such as fanglomerate, basal conglomerate, and border conglomerate should probably be avoided.

Massive diabase intrusions are implaced through the upper Passaic Formation in the west central portions of the Newark Basin and in the lower Passaic Formation in the northern Newark Basin. These intrusions generally parallel the distribution of major bodies of gray and black siltstone: thus, the largest intrusions are broadly concordant (but locally discordant) with the Lockatong Formation (i.e., Palisades, Rocky Hill, and Sourland Mountain Sills) or the Perkasie Member of the Passaic (Haycock Mountain, Coffman Hill, and possibly Cushetunk Mountain diabases; see Figure 5). The general pattern seems to be for these intrusions to be implaced progressively higher in the Newark Basin section from east to west.

The Passaic Formation, like most Newark Supergroup deposits, is cut by a series of narrow, often nearly straight and vertical diabase dikes trending north and northeast. The mapping of the distribution of these intrusives is still very incomplete.

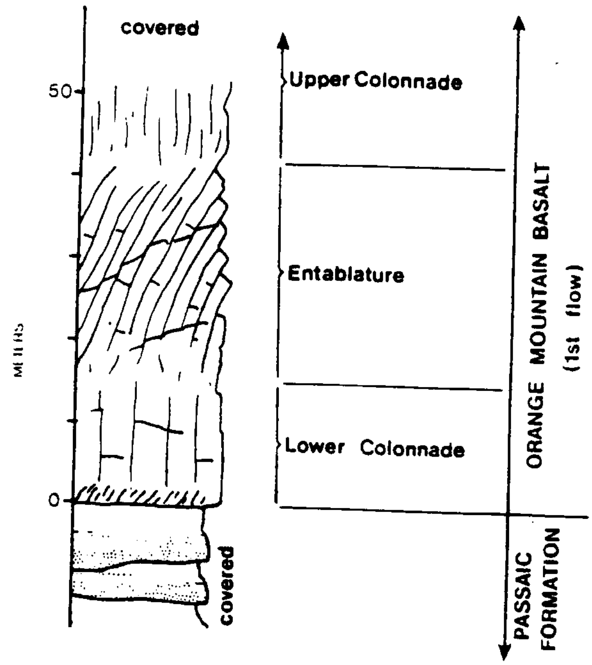


FIG. 6. Type section of the Orange Mountain Basalt; exposure along Interstate Route 280 in East Orange, New Jersey. In Passaic Formation, stipple represents red sandstone and plain area represents red sandstone.

Orange Mountain Basalt

Orange Mountain is the local name of the First Watchung Mountain in Essex County, New Jersey, long known for its spectacular exposures of columnar basalt (Cook, 1884); the name Orange Mountain is, therefore, suggested for these multiple (at least two), tholeiitic, basalt flows and interbedded volcanoclastic units above the Passaic Formation and below the Feltville Formation. The type section, exposing about 40% (50 m) of the formation's total thickness, is along Interstate Route 280 at its cut through Orange Mountain in East Orange, New Jersey (Figure 7). According to Puffer and Lechler (1980) the Orange Mountain Basalt belongs to the high-TiO_2 type of basalt of Weigand and Ragland (1970) and is chemically very similar to the Palisade Diabase.

The Orange Mountain Basalt is the oldest Newark Basin Formation thought to be wholly

Early Jurassic in age, and like other Jurassic beds in the Newark Basin, the main area in which the basalt is preserved is the Watchung Syncline (Figure 2). Smaller synclines preserve portions of the Orange Mountain in several other regions of the Newark Basin (Figure 2). In the New Germantown and Sand Brook synclines, the overlying Feltville Formation is preserved above the basalt; correlation by palynomorph assemblages and fossil fish (Cornet, 1977; Olsen, McCune, and Thomson, in press) demonstrate the identity of the Feltville Formation and by implication the underlying basalt. Between these two synclines is a newly identified very small outlier of basalt, preserved in what can be called the Flemington Syncline (Figure 5). Unfortunately, the remnant is so small that no sedimentary rocks are preserved above it. The simplest hypothesis identifies this remnant as an additional portion of the Orange Mountain Basalt. What has been termed the Jacksonwald Basalt (Wherry, 1910) outcrops in a syncline near the southern terminus of the Newark Basin (Figure 2) over 100 km southwest of the Watchung Syncline. Palynomorph assemblages recovered from the overlying sediments indicate correlation with the Feltville Formation (Cornet, 1977). There is no evidence to contradict the hypothesis that this outlier, too, represents the Orange Mountain Basalt. A possible remnant of Orange Mountain Basalt is present in the Ladentown Syncline in Rockland County, New York (Figure 2). Between this and the northern end of the Watchung Syncline is the Union Hill exposure of basalt. N. M. Ratcliff (pers. Comm.) has recently found exposures which show this unit to be extrusive, and, as such, it is most likely Orange Mountain Basalt. According to Geiger, Puffer, and Lechler (1980) and Geiger (personal communication), the Oldwick, Sand Brook, and Jacksonwald outliers are chemically identical to the Orange Mountain Basalt; while the Ladentown Outlier is chemically most similar to the Preakness Basalt (Second Watchung of Darton, 1890). Taken together, these remnants of Orange Mountain Basalt suggest that originally the basalt covered the almost entire Newark Basin, a minimum of over 7,000 km^2. This is comparable to the extent of the Holyoke Basin over the Hartford Basin and the North Mountain Basalt over the Fundy Basin.

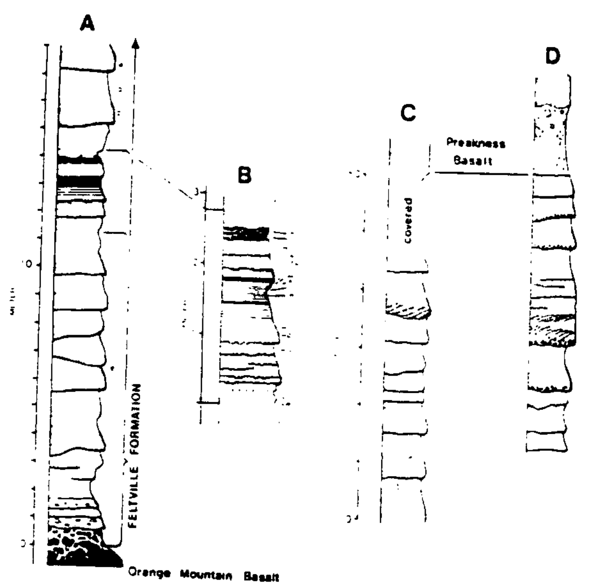


FIG. 7. Type section of the Feltville Formation and sections of the upper Feltville Formation.

A and B, type section of the Feltville Formation: section exposed along ravine for Blue Brook about 1 km south of Lake Surprise in the Watchung Reservation. For key to individual units, see Appendix.

C and D, sections in the upper Feltville Formation. Dark stipple represents buff sandstone and feldspathic sandstone while the light stipple represents red sandstone and coarse siltstone. The light areas represent red siltstone and the black oblong dots, carbonate concretions. Section C is exposed along a tributary of East Branch, near Dock Watch Hollow, north of Martinsville, New Jersey. Section B is exposed in a cut in back of the Pleasant Valley Nursing Home in West Orange, New Jersey. C and D are 20 km from one another.

The Orange Mountain Basalt appears thickest in the Watchung Syncline, varying between 100 and 200 m. At least 130 and 120 m are present in the New Germantown and Sand Brook synclines, respectively, and greater than 100 m are present in the Jacksonwald Syncline. Existing exposures do not permit estimate of the thickness of the Flemington, or Union Hill.

Individual flows of the Orange Mountain Basalt (like other Newark Basin extrusives) are identified by recognition of the following criteria: glassy, dense, or discolored contacts at a flow boundary; thin volcanoclastic beds between flows; or a sequence of massive, columnar, and vesicular basalt identifying a single cooling unit as in a

Tomkeiff (1940) structural sequence. Using these criteria, a minimum of two flows are evident in most sections of the Orange Mountain Basalt in at least the Watchung and New Germantown synclines (Faust, 1975 and pers. obs.). The lower flow is exposed in the type section and consists of nearly a complete Tomkeiff sequence (Manspeizer, 1969). Other exposures of this flow are abundant. In most places the lower and upper flows are separated by a red volcanoclastic bed which is generally less than a meter thick (Bucher and Kerr, 1948; Johnson, 1957; Van Houten, 1969; Faust, 1975). In the New Germantown Syncline, however, the volcanoclastic bed is over 4 m thick and has numerous beds of red, purple, and gray, ripple-bedded and mudcracked siltstone. The upper flow is extensively pillowed and pahoehoe-like near the type section (Fenner, 1908; Van Houten, 1969) and locally at isolated spots throughout the Watchung Syncline. Elsewhere, however, the upper flow resembles the lower in having a large columnar entablature. Whether or not the two flows exposed at these outcrops represent single continuous sheets or smaller discontinuous units is as yet not known.

Feltville Formation

The sedimentary rocks above the Orange Mountain Basalt and below the Preakness Basalt are here termed the Feltville Formation. The Feltville consists of red siltstone and sandstone, buff, gray, and white feldspathic sandstone, and a thick, laterally continuous non-red unit containing a unique, frequently laminated limestone. This formation is named for the type exposure (Figures, 2, 7), in the old village of Feltville in the Watchung Reservation (Union County Park Commission), where about 15% of the total thickness of the Feltville Formation is exposed.

Like the underlying Orange Mountain Basalt, the Feltville Formation is preserved in the Watchung, New Germantown, Sand Brook, and possibly the Jacksonwald synclines (Figure 2). It averages about 170 m thick in the Watchung Syncline, apparently thickening to the southwest; at least 300 m are present in the Sand Brook Syncline, 600 m in the New Germantown Syncline, and at least 200 m in the Jacksonwald Syncline.

The Feltville Formation is distinguished from the underlying Passaic Formation and younger Jurassic formations of the Newark Basin by the presence of abundant beds of buff, gray, or white feldspathic sandstone interbedded with red siltstone in fining-upwards sequences (Figure 7); thus, much of the Feltville resembles the Stockton Formation. The lower half of this formation contains a black to white laminated limestone, calcarenite, and graded siltstone bed (0.4 - 3 m) containing abundant fossil fish. This lies between two beds (each 1 - 7 m) of gray, small to large-scale crossbedded siltstone and sandstone. As is true for the formation as a whole, these three beds are thickest in the New Germantown Syncline (> 14 m). The available evidence suggests that the Feltville Formation, like the Orange Mountain Basalt, originally occupied the whole area of the Newark Basin, and judging from the exposures in the Watchung Syncline and the other synclines in which the formation is exposed, the predeformational shape of the Feltville Formation was a wedge thickest along the western border of the basin.

Preakness Basalt

The name Preakness Basalt is proposed for the extrusive, tholeiitic basalt flows and interbedded volcanoclastic beds above the Feltville Formation and below the Towaco Formation. Preakness Mountain is the local name of the Second Watchung Mountain, a ridge of this basalt near Franklin Lakes, New Jersey. The type section includes about 30% of the formation and is located along Interstate Route 280 (Figure 8) about 2.25 km west of the Orange Mountain Basalt type section. This Preakness Basalt resembles the high-Fe_2O_3 basalt of Weigand and Ragland (1970) and resembles Walker's (1969) "second pulse" portion of the Palisades Diabase in trace element composition (Puffer and Lechler, 1980).

The Preakness Basalt is the thickest extrusive unit in the Newark Basin. The calculated thickness is 215 m at its northernmost outcrops at Pompton, New Jersey (Figure 9). Judging from outcrop width the formation thickens to the south to as much as 500 m near the type section. The

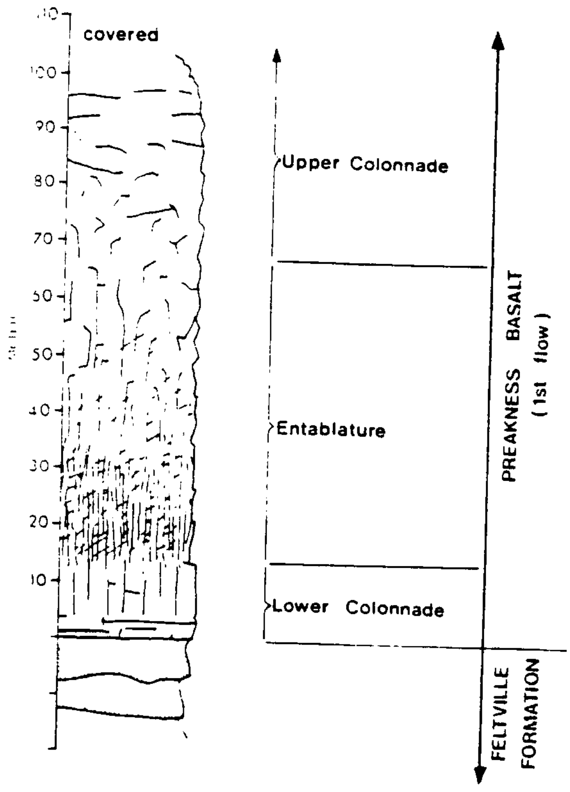


FIG. 8. Type section of the Preakness Basalt. Section located along Interstate Route 280, 2.25 km west of type section of the Orange Mountain Basalt. Symbols for Feltville Formation, as for Passaic Formation (Figure 6).

maximum figure is questionable since in the latter area the strike of the formation nearly parallels the trend of small faults cutting this region. That a figure of more than 300 m may be near the truth is suggested by the persistence of a large outcrop width around the southern curve of the Watchung Syncline. In contrast to the underlying units, the Preakness Basalt is not definitely preserved outside the Watchung Syncline. There are small masses of basalt at the northwestern edge of the New Germantown and Sand Brook synclines but the exposures are not good enough to tell whether these are beds lying stratigraphically above the Feltville or merely an upthrown fault slice of the Orange Mountain Basalt. However, on the basis of trace element geochemistry Geiger, Puffer, and Lechler (1980) have concluded that these small masses are Preakness Basalt. Likewise, according to the latter authors, the Ladentown flows are also Preakness Basalt.

At its base, the Preakness Basalt is much more variable than the Orange Mountain Basalt. Locally, there are thick (20 m, see Figure 9) sequences of multiple flows of highly vesicular basalt flows, possibly making up basalt forset beds (Manspiezer, pers. comm.) with intercalcated volcanoclastic beds; in other areas there are thick beds of angular, vesicular basalt breccia (aa). The latter tends to be very weathered and porous at the surface. In still other areas, the thick main basalt flow lies directly on unaltered (megasopically) sediments of the Feltville Formation.

At least two or perhaps three thick individual flows make up the bulk of the Preakness Basalt. The lowest flow is the thickest (about 100 m) and is exposed throughout the Watchung Syncline, usually showing a complete (although modified) Tomkeiff structural sequence. In most outcrops, the entabulature is coarse-grained and densely jointed, forming high, irregularly angular columns 0.1 m to 1.0 m in width, in marked contrast to those of the Orange Mountain Basalt. The first flow is separated from the second by a thin red siltstone, the distribution of which was mapped by Kümmel (1897) and Lewis (1907b)

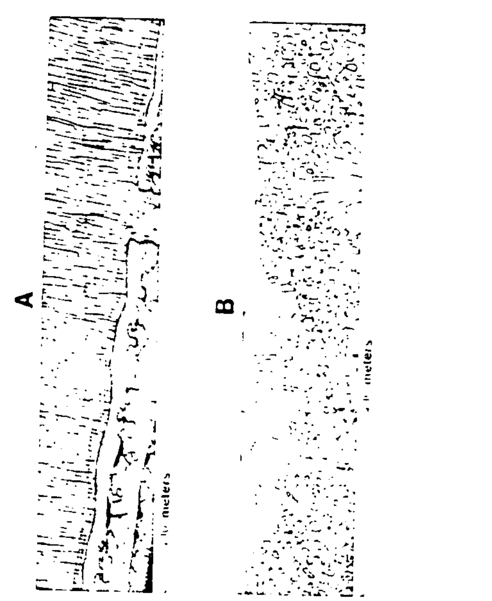


FIG. 9. Thin flow units at the base of the Preakness Basalt; A, thin pahoehoe flows and possible feeder dike along Interstate Route 78 in Pluckemin, New Jersey; B, possible aa flows exposed along the Passaic River at Little Falls, New Jersey (adapted from Darton, 1890).

in the southern portion of the Watchung Syncline (but see Faust, 1975). The extent of the second flow out of this area is not well known. Lewis (1908) states that all the basalt above the first flow belongs to a single flow 244 m thick, but in the northern part of the Watchung Syncline there is at least one other flow (Faust, 1975). This is separated from what I presume to be the second flow by a red and buff siltstone. This third flow is at least 60 m thick. Darton (1890) presented evidence of at least three flows in the Preakness Basalt at Pompton (Figure 10) where the formation is 215 m thick. Kümmel (1898) favors the hypothesis that the Pompton exposures represent a single flow repeated twice by faulting; that Darton's interpretation is more likely is shown by the extension of the upper two flows across Pine Lakes in Pompton in a direction exactly parallel to the strike of the overlying Towaco Formation but at an angle to the trend of the local faults (Figure 14). Finally, three flows appear present in the Ladentown outlier. More field work is needed to clarify the number and distribution of flows within the Preakness Mountain Basalt.

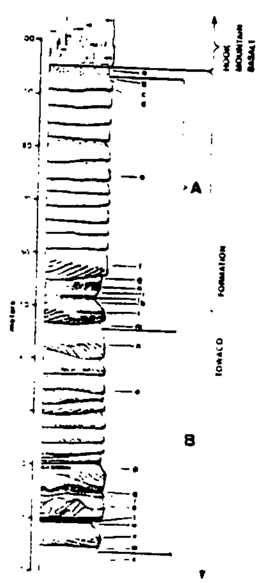


FIG. 10. Type section of the Towaco Formation in the Dinosaur Tract, Essex County Park Commission, Rosaland, New Jersey. For key to individual units see Appendix. A, upper cycle; B, lower cycle (not now exposed).

In several works, the Cushetunk Mountain Pluton has been tentatively referred to the Preakness Basalt (Second Watchung Basalt — see Sanders, 1962; Sanders, 1963). That this unit is definitely intrusive is shown by the following observations: 1, there is no vesicular portion; 2, the unit cuts across bedding; 3, there is a 20+ m thick metamorphic areole in the sediments around the body; 4, the unit is very coarse — in fact, a coarse granophyre pluton with chilled borders. The igneous mass which makes up Cushetunk Mountain is, therefore, an irregular intrusion injected into the upper Passaic Formation (see Puffer and Lechler, 1979).

The Towaco Formation

The name Towaco Formation is here applied to the red, gray, and black sedimentary rocks (and minor volcanoclastics) found below the Hook Mountain Basalt and above the Preakness Mountain Basalt in the Watchung Syncline. The type section is the Essex County Park Commission Dinosaur Tract (Roseland Quarry), Roseland, New Jersey, and is located about 12 km south of the village of Towaco, New Jersey, a classic reptile footprint locality (Lull, 1953), from which the formation takes its name. The type exposure consists of 60 m of the uppermost Towaco Formation making up 20% of the 340 m present in the area (Figure 12).

Laterally continuous, symmetrical sedimentary cycles characterize most of the Towaco Formation. These consist of a central black or gray microlaminated calcareous siltstone surrounded above and below by gray sandstone and siltstone beds arranged in fining-upwards cycles. Above and below these units are red clastics, also arranged in fining-upwards cycles. These symmetrical cycles are a mean of 35 m thick and bear a close resemblance to the East Berlin Formation (Hartford Basin) cycles described by Hubert, Reed, and Carey (1976). Towaco cycles are an order of magnitude thicker than Lockatong or Passaic Formation cycles and differ from the otherwise similar Feltville Formation non-red sequence in containing a predominantly clastic rather than carbonate laminated portion (Figure 3).

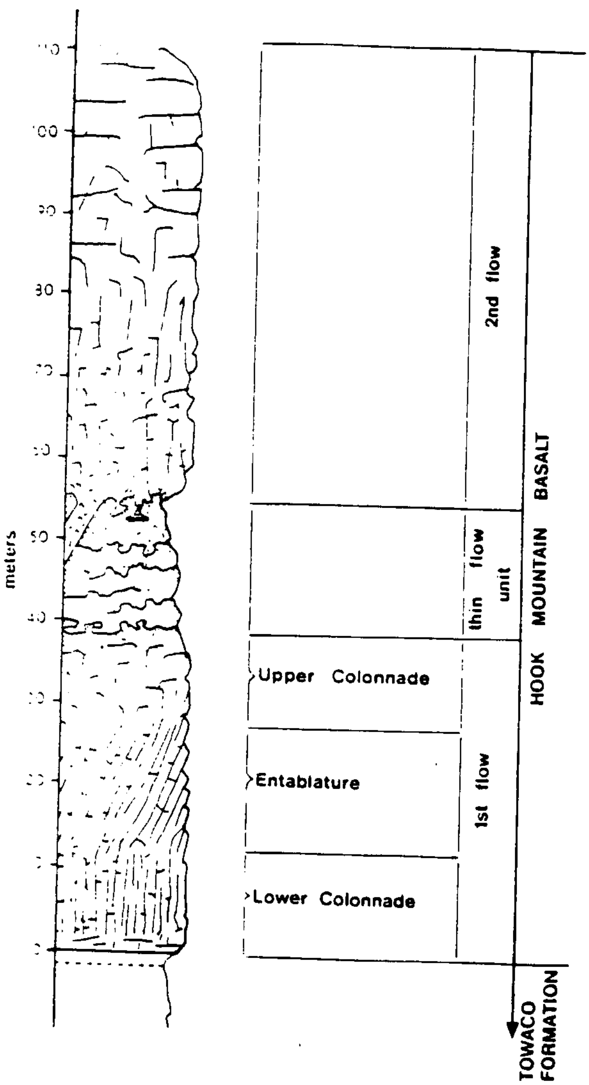


FIG. 11. Type section of the Hook Mountain Basalt. Note two major flow units and interbedded thin pahoehoe flows and possible feeder dike. Section exposed along Interstate Route 80 near Pine Brook, New Jersey.

The uppermost cycle is well exposed in the Roseland Quarry. Formerly another cycle was exposed in an adjacent area (Olsen, 1975), and yet another was located in a nearby well boring. In total, six successive cycles have been identified in the upper half of the Towaco Formation, and most of these have been traced throughout the Watchung Syncline.

There is a thin brown volcanoclastic unit at the top of the Towaco Formation. It is about 1 m thick and occurs at most exposures of the upper Towaco Formation from at least Pompton to Roseland. It is especially well exposed at the Towaco type exposure. Lewis (1908) described unweathered samples of this unit and noted that it consists of altered volcanic glass with inclusions of feldspar and augite and pseudomorphs after olivine in a matrix of brown radial natrolite. Small blocks of vesicular basalt are occasionally present and at Pompton very thin vesicular "flow breccias" are included in the unit (Faust, 1978).

The Hook Mountain Basalt

The uppermost extrusive volcanic unit in the Watchung Syncline is here formally designated the Hook Mountain Basalt (Baird and Take,

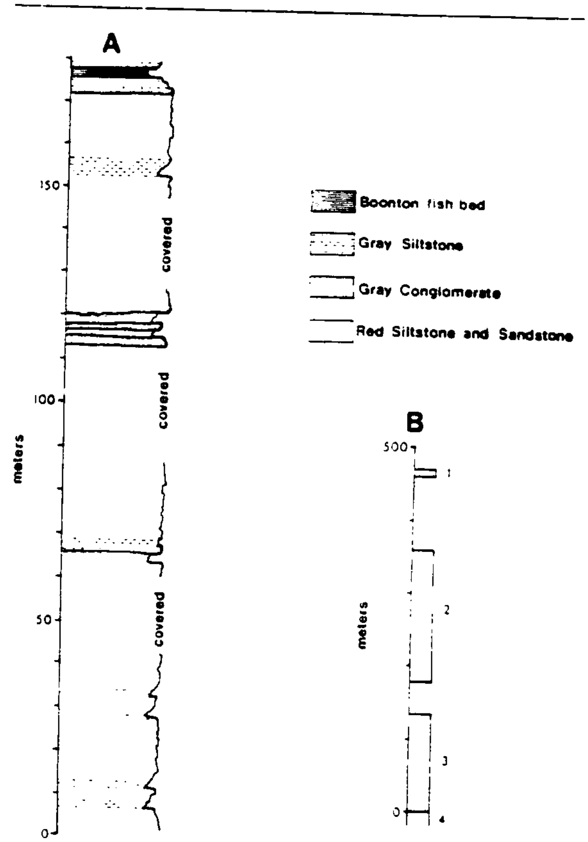


FIG. 12. Type section of the Boonton Formation: A, section exposed along Rockaway River in Boonton, New Jersey; B, composite section of entire preserved Boonton Formation — 1, red matrix conglomerate exposed at Chestnut Hill, Morristown, New Jersey, 2 beds making up the type section, 3, gray, black, brown and red siltstones exposed near Bernardsville, New Jersey, 4, Hook Mountain Basalt.

1959). This formation takes its name from the location of the type section (Figure 12) which cuts along Hook Mountain Road and Interstate Route 80 through the southern terminus of Hook Mountain near Pine Brook, New Jersey. About 80% of the total formation is exposed here. The Hook Mountain Basalt differs markedly in trace element composition from the older basalt formations of the Newark Basin with half as much K_2O and Sr, 20% less Rb, and with a much greater FeO/MgO ratio than the Orange Mountain Basalt (Puffer and Lechler, 1980).

The Hook Mountain Basalt is the thinnest of the three major extrusive formations of the Newark Basin; at its type section it is 110 m thick and it retains this thickness throughout the Watchung Syncline. There are gaps in the ridge made by this basalt between Hook Mountain and Riker Hill, and Riker Hill and Long Hill (see Figure 2). That the basalt extends subsurface across these gaps is shown by the bedrock topography as mapped by Nichols (1968) and aeromagnetic data (Henderson, et al., 1966). The maps of Lewis and Kümmel (1910-1912) and all maps since have omitted the Hook Mountain Basalt in the town of Bernardsville, New Jersey, and this is corrected here (Figure 2).

Two flows have been recognized through most of the Watchung Syncline. At the type section, the lower flow is 57 m thick and shows a complete Tomkeiff structural sequence (Figure 12), while the upper flow is 40 m thick but more massive, without clear columnar jointing. As is the case for the flows which make up the two older basalt formations of the Newark Basin, it is not definitely known whether the upper and lower flows of the Hook Mountain Basalt represent continuous sheets over the extent of the whole formation.

The Boonton Formation

Overlying the Hook Mountain Basalt are sedimentary rocks (Baird and Take, 1959) termed the Boonton and Whitehall beds of the Brunswick Formation. The formal name Boonton Formation is suggested for these beds, the type exposure (Figure 13) being along the Rockaway River near Boonton, New Jersey. The Boonton Formation is the youngest sedimentary unit in the Newark Basin and consists of at least 500 m of red, brown, gray, and black fine-to-coarse clastics and minor evaporitic beds.

The stratigraphically lowest beds in the Boonton Formation are well exposed near Bernardsville, New Jersey. Here the formation consists of blocky to finely bedded red, gray, brown, and black, often dolomitic, siltstone. Thin (1 - 4 m) beds riddled with "hopper casts" (pseudomorphs after gypsum, glauberite, and ?halite) are common in sequences of all colors. The different colors or textures of beds do not seem to be arranged in any obvious or consistent cyclic pattern and do not resemble other units in the Newark Basin. Stratigraphically above these beds is a sequence of well bedded red siltstones and sandstone beds (mean thickness 35 m) alternating with thinner beds of gray and gray-green siltstones (mean thickness 2 m). The longest continuous section of these beds is the type section (Figures 3 and 12). The uppermost beds at the type section include a fossil fish-bearing calcareous gray siltstone laminite at least 1 m thick. This is the famous Boonton Fish Bed (Smith, 1900; Schaeffer and McDonald, 1978). Also in this section are gray and brown conglomerate units up to 0.5 m thick. Along the western edge of the Watchung Syncline the Boonton Formation contains thick sequences of red- and gray-matrix conglomerate and breccia. The relationship of these units to the finer portions of the formation is unclear.

NOTES ON THE STRUCTURAL GEOLOGY OF THE NEWARK BASIN

There are very few generalities which can be applied with confidence to Newark Basin structure. It is generally conceded, however, that: 1, Newark sediments rest with a profound unconformity on the basement rocks; 2, Newark rocks are overlain with an angular unconformity by post-Jurassic rocks; 3, most Newark beds dip to the northwest 10° - 20°; 4, there are a series of faults of large displacement which cut the Newark deposits into a series of major fault blocks; 5, there are at least some smaller faults; 6, beds of the west side of fault blocks tend to be folded into a series of anticlines and synclines with their axes perpendicular to the long axes of fault

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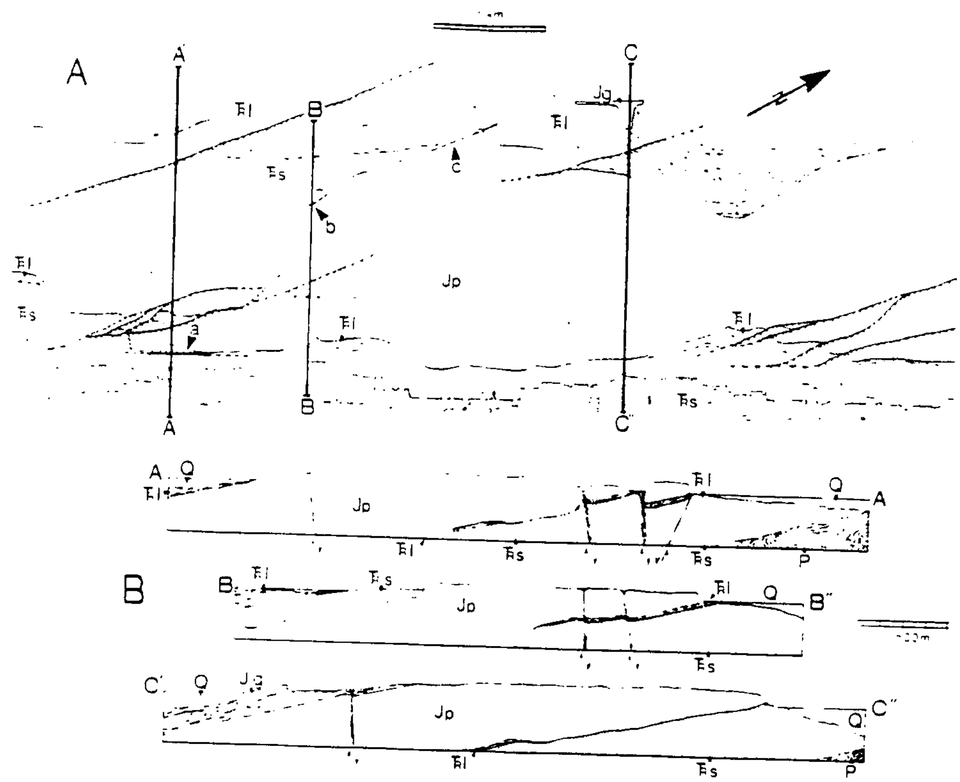

FIG. 13. Lincoln Tunnel area, Weehawken and Central Park Quadrangles. A, map of major lithologic units and structural features; B, sections through the Palisades Ridge. No vertical exaggeration. Abbreviations of lithologic units as follows: l, Triassic Lockatong Formation; s, Triassic Stockton Formation; Jp, Jurassic Palisade Sill; Jg, Jurassic Granton Sill; P, metamorphic basement rocks of the New York City Group. a, b, and c refer to areas discussed in text. Faults with teeth on down dropped side.

blocks; and 7, beds on the east side of the same blocks tend not to be folded. The relationships of Newark Basin sediments to basin margins (i.e., faults or onlaps), the thicknesses of Newark strata, the number, distribution, and direction of smaller faults, the sense of motion of the major and minor faults (normal or oblique or strike-slip), and the physical relationships of joints to faults and folds have never been satisfactorily resolved, although research toward this goal is underway (Ratcliff, 1979). Obviously, all questions involving these features cannot be discussed in this paper, both because of lack of space and a lack of data. Enough observations have been made, however, to show some aspects of local structural style (Figures 5, 13, 14). There is no doubt, however, that Newark Basin structure is complex, and that further observation will change the results extracted even from the limited areas discussed here.

The Lincoln Tunnel area (Figure 13) of the Palisades Ridge forms part of the eastern edge of the Newark Basin and is cut by a series of putatively normal faults striking N 5-10° E, dipping vertically to 40° east, and with displacements of from 1 to 100 m (Fluur, 1941; Van Houten, 1969). Crush zones vary from a few centimeters to several meters (Fluur, 1941). There is also at least one major northwest-dipping normal fault on the east face of the Palisades (Kings Bluff) similar to those inferred to exist in the southern part of the Newark Basin by Sumner (1979) on the basis of geophysical data. This fault (a in Figure 14) was encountered during the construction of the north tube of the Lincoln Tunnel and is described in Thomas Fluur's unsurpassed work of the geology of the tunnel (Fluur, 1941). "The strike of the fault is approximately N 35° E and the dip 65° NW. Slikensides on the fault indicate that the movement had carried the block on the west side of the fault downward in respect to the east side with practically no horizontal component of movement. The fault is accompanied by numerous joints in both the shale and sandstone members adjacent. . . . The actual crush zone of the fault is only 0.5′ wide. . . . The movement was sufficient to bring up sandstones from a horizon much below that of the baked shales and in the movement the edges of the shale members were dragged upwards, so that close to the fault they show a maximum dip of 55° instead of the usual 15°" (p. 197). Finally, Fluur maps the presence of several minor faults striking S 80° E.

On the west slope of the Palisades Ridge, 1.5 km northwest of the Lincoln Tunnel, the sediment diabase contact is a plane tilting about 45° - 70° NW and striking an average of N 5° E for a distance of 3.25 km (Figure 13). This is one of the areas where the Palisade Diabase has more of a dike than sill appearance (Darton, 1892, 1902, 1908; Van Houten, 1969). For a distance of about 2 km, coarse cream- or buff-colored sandstones (apparently upper Stockton Formation) rest against the steeply dipping diabase wall. At a contact (b of Figure 14) described by Darton (1892, 1902) at the former West Shore Railroad Tunnel, the contact is welded at places and slightly undulatory. At an exposure 2 km north (c of Figure 14), however, there are well developed parting planes between the diabase and sandstone. In this area the sandstone, but not the diabase, is fractured and slikensided, the sense of motion being normal relative to the contact. The sandstone bedding is also dragged upwards at the contact. Just north of the latter outcrop (c of Figure 14), the Lockatong-Palisade-Sill contact is exposed. Lockatong Formation is exposed from there north to at least the George Washington Bridge. Although the situation is somewhat ambiguous, the contact and map relations are commensurate with a hypothesis of stepping up of the Palisade Sill in this region, so that the entire mass of upper Stockton and basal

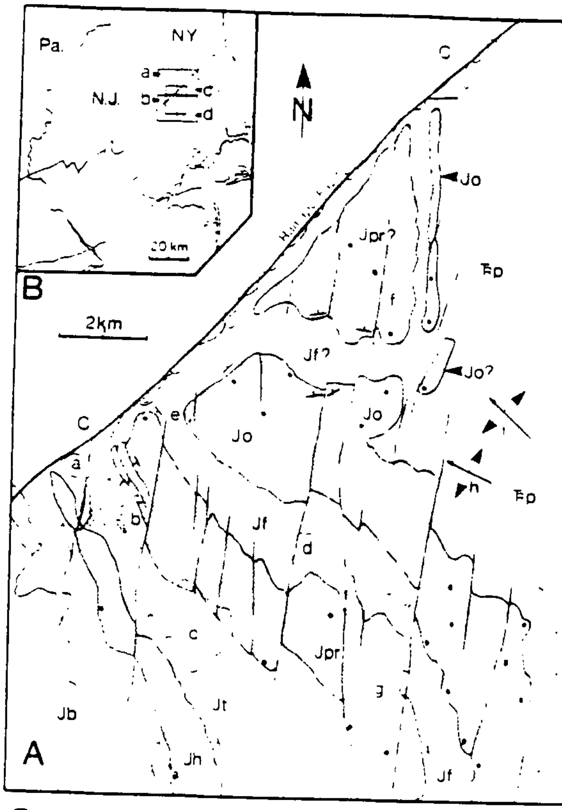

FIG. 14. Oakland Area, along Ramapo Fault, northwestern Newark Basin.

A, Preliminary geologic map: a, Pompton Lake; b, Pines Lake; c, Pequannock Reservoir; d, Franklin Lake; e, town of Oakland, New Jersey; f, Campgaw Mountain; g, Preakness Mountain; h, Oakland Anticline; i, Campgaw Syncline; C, crystalline rocks of the western highlands; p, Triassic Passaic Formation, conglomeratic facies; Jo, Jurassic Orange Mountain Basalt; Jf, Jurassic Feltville Formation; Jpr, Jurassic Preakness Mountain Basalt; Jt, Jurassic Towaco Formation; Jh, Jurassic Hook Mountain Basalt; Jb, Jurassic Boonton Formation. Note mapped distribution of laminite portions of Towaco cycles (dashed lines between Pines (a) and Pompton (b) Lakes) and mapped distribution of the three flows of the Preakness Mountain Basalt above and through Pines Lake (b). Also note that the distribution of major lithologic units is primarily based on maps of Darton, *et al.* (1908) and Lewis and Kümmel (1910-1912) with some major revision, especially in the areas around Pequannock Reservoir and Campgaw Mountain, where data from Henderson *et al.* (dots represent the latter's mapped aeromagnetic highs) and my own observations have been used.

B, Key, showing position of Oakland area (shaded) in Newark Basin and the relevant quadrangle sheets (topographic): a, Wanaque Quadrangle; b, Pompton Plains Quadrangle; c, Ramsey Quadrangle; d, Paterson Quadrangle.

Lockatong is lifted the thickness of the sill on the west side of the Palisade ridge, while on the east side the diabase rests above the stratigraphically equivalent portion of the Stockton and Lockatong (Figure 13).

The west edge of the northern part of the Newark Basin near Oakland, New Jersey (Figure 14) is like the east wall of the Hartford Basin in having served as a model for interpreting other Newark Supergroup Basins (Russell, 1892; Russell, 1922; Barrell, 1915; Sanders, 1963 — but see Faill, 1973). The nearly straight truncation of all Newark deposits and associated structures along a line striking N 45° E, local drag folding, and direct observation by borings (Ratcliff, 1979) indicate that a major fault, the Ramapo Fault, forms the northwestern edge of the Newark Basin, from at least Morristown, New Jersey to Theills, New York (60 km). Locally, at least, the fault dips 60° southeast (Ratcliff, 1979). At Morristown there is an offset to the east in the Ramapo Fault, and southwest of Bernardsville, New Jersey, the Ramapo Fault appears to join the braided northern continuation of the Hopewell Fault as suggested by Sanders (1962) and Manspiezer (pers. comm.). The northern portion of the Ramapo Fault is offset again at Theills, probably continuing northeast into Westchester County, New York (Ratcliff, 1973). As illustrated in the preceding discussion of the Cushetunk area and the structural map in Figure 2, such a long, linear fault as the Ramapo is, in truth, atypical for the western margin of the Newark Basin (as noted by Faill, 1973).

Newark Basin strata are warped into a series of anticlines and synclines along the Ramapo Fault, much as they are along the Flemington and Hopewell faults (Wheeler, 1939). These folds are oriented with their long axes more or less normal to the strike of the fault. These folds are, in turn, cut by a series of smaller faults (most of which probably have a large dip-slip component) downdropping to the east and striking, like those of the Lincoln Tunnel region (Figure 13) N 5° - 10° E (Figure 14). While apparent map offsets due to these faults are most obvious close to the Ramapo Fault (Figure 2), some of this series make it as far south as Newark, New Jersey; in fact, both the type section of the Orange Mountain and Preakness Mountain Basalts are cut by a series of faults. It is not clear if any of these faults completely cross the basin, however. Like the folds along the basin edge, these faults terminate to the north along the Ramapo Fault.

Along the northwest border of the Newark Basin, in the Cushetunk Mountain area (previously mentioned, Figure 5), Newark strata onlap onto a step-faulted basement. To the west of Bernardsville, the border of the Newark Basin consists of a series of faults trending N 35° - 50° E and N 5° -10° E, the latter being truncated by the former, and a series of onlaps of Stockton through Passaic Formation on basement. As is evident from Figure 5, the pre-Newark floor must have been some 5,000 m deeper near Clinton than at Potterstown during the deposition of the Orange Mountain Basalt. These rather complex relationships are best explained by a hypothesis of "piano-key" fault blocks bound by faults with a major normal component striking N 35° -50° E. During deposition of the younger Newark Basin beds, these blocks formed ramps which dipped southwest into the basin along their long axes at about 13° and thus resemble the right echelon relay faults and ramps described by Kelly (1979) for the Rio Grande Rift. Near Jutland, New Jersey, basal Passaic Formation apparently laps over one of the N 40° E faults, presumably indicating that the fault ceased movement prior to the deposition of these Passaic beds, an interpretation implied by McLaughlin (1946).

Thus, on the basis of these three areas it is possible to conclude that Newark Basin strata are cut by at least three sets of faults, most probably normal; one set striking N 30° - 50° E, dipping southeast on the west edge of the basin; another, as yet poorly known set with the same strike as the latter but dipping northwest, dropping beds down to the northwest; and a third set striking N 5° - 10° E. The southeast dipping northeast striking faults truncate the major folds in Newark strata as well as the other faults, while the more northerly striking faults cut but do not terminate folds and are responsible for the difficulty in making reliable thickness estimates of Newark Basin beds. There are definitely more faults present and of more varied nature than mentioned above. Kümmel (1897) and Darton (1890) show the presence of several reverse faults and small thrusts, and my own observations show additional faults parallel to bedding often with substantial crush zones. Work is now being carried out, however, on these topics (Ratcliff, pers. comm.).

Sanders (1962, 1963, 1974) has proposed that many of the faults described here as dip-slip are actually strike-slip. It is indeed true that there are abundant sets of non-vertical slikensides at virtually all exposures of Newark Basin beds near major faults; however, as noted by Faill (1973), the evidence from drag folding along major faults probably indicates major movement was dip-slip. Reasons for postulating many kilometers of strike-slip motion along major faults seems unconvincing to this author. Nonetheless, horizontal and oblique slikensides attest to some horizontal movement during the faults' history — perhaps at a relatively late stage.

Relating these structural features, outlined here for small areas of the northern part of the Newark Basin, to the southern portions of the basin is not yet possible, though it is a subject of ongoing field work. Despite recent progress, regional synthesis of Newark Supergroup structure is still years in the future.

PALEONTOLOGY AND BIOSTRATIGRAPHY

Despite numerous statements to the contrary, fossils of many kinds are abundant in the sedimentary rocks of the Newark Basin and in the Newark Supergroup as a whole (Thomson, 1979). The supposedly nearly barren Passaic Formation has produced literally thousands of reptile footprints (Baird, 1957), as have portions of the Towaco Formation (Olsen, 1975). Fossil fish with superb morphological details have proved abundant in all three Jurassic sedimentary formations (Olsen, McCune, and Thomson, in press; Thomson, 1979). Megafossil plant remains have also proved to be locally abundant and well preserved (Bock, 1969; Cornet, 1977) and fossil pollen and spore assemblages have been recovered from all major sedimentary units (Cornet, 1977). Even what are usually regarded as some of the rarest of all vertebrate fossils — articulated small reptile skeletons — are locally abundant (Olsen and Colbert, MS; Colbert and Olsen, MS). The distribution of characteristic fossils in the formations described in this paper are given in Figure 3 and the Appendix, Table 2. Obviously, such fossil remains are the grist of biostratigraphic correlation and paleobiological studies. Work has just begun on these areas, but it is already clear that the Newark Basin section

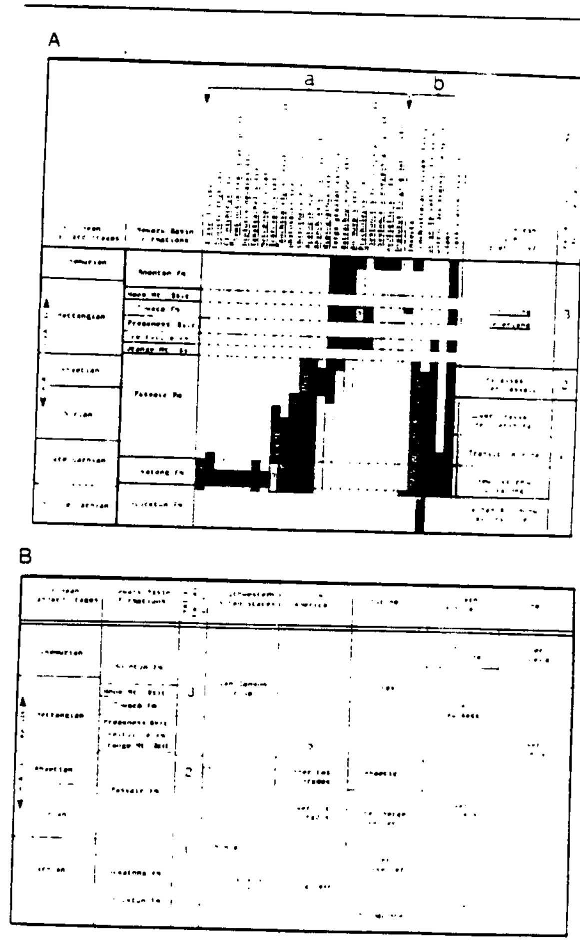

FIG. 15. A, Distribution of most abundant vertebrate and invertebrate fossils in the Newark Basin: a, taxa thought to be biostatigraphically important; b, taxa thought to be of little or biostratigraphic value. Letters in parentheses (f), (r), (a), (f) indicate nature of fossils: (a) amphibian; (r) reptile; (f) fish; (f) reptile footprints.

B, Correlation of the formations of the Newark Basin with other early Mesozoic sequences.

Data for A and B from Cornet (1977), Olsen and Galton (1977), Olsen, McCune and Thomson (in press), Olsen, Barid, and Salvia (MS), and Olsen and Colbert (MS).

will serve as a reference standard for comparison with other early Mesozoic areas.

The basic biostratigraphic framework for Newark Basin deposits has been outlined by Olsen and Galton (1977) and Cornet (1977) and the details of this correlation will be given elsewhere (Olsen, McCune, and Thomson, in press; Olsen, Baird, and Salvia, MS; and Colbert and Olsen, MS). At this time it is necessary to present the distribution of taxa within the Passaic through Boonton formations and tie these in with the regional correlation (Figure 15).

For regional correlation, relatively strong emphasis has been placed on the distribution of palynomorph taxa (Cornet, 1977, and pers. comm.). This reliance has been especially strong for correlation between the upper Newark and the European Early Jurassic (see Figure 15). Tetrapod data, both in the form of skeletal remains and footprints, parallel the palynomorph data, and have been essential in correlating regions from which floral data is not available (such as the upper Stormberg — J. M. Anderson, pers. comm.). For the internal correlation of the Early Jurassic portions of the Newark, however, the biostratigraphic subdivisions based on pollen and spores have proved too broad (Cornet, 1977). In these areas, fossil fish have provided a means of correlation (Olsen, McCune, and Thomson, in press).

The broad aspects of this biostratigraphic correlation are in agreement with most geophysical data, significantly the paleomagnetic work of McIntosh (1976) and Reeve and Helsley (1972) on the Newark Basin section and the Chinle Formation (southwestern United States), as well as with the paleomagnetic work of DeBoer (1968). In addition, radiometric dates available for Newark Basin basalts are in agreement with a Jurassic age for these units (Armstrong and Besancon, 1970; Dallmeyer, 1975; Sutter and Smith, 1979; W. D. Masterson and K. K. Turekian, pers. comm.). It must be noted, however, that the geophysical techniques used to date may be too inconsistent for the data to be used in fine scale correlation among the various individual formations of the Newark Supergroup.

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APPENDIX

Type Section of the Passaic Formation

Thickness (m)	Description
Section A	Base of section A is 427 m above and 3.4 km west of last exposures of Lockatong along Rt. 80 (all sections measured from top down).
1.2	red blocky siltstone
1.8	red massive feldspathic sandstone
.6	red siltstone
1.2	red massive feldspathic sandstone, fining-upwards
3.1	red blocky siltstone
3.0	red fine feldspathic sandstone, fining-upwards
1.5	red blocky siltstone
1.8	red cross-bedded feldspathic sandstone, fining-upwards
26.0	covered
4.6	red siltstone
41.0	covered
6.1	red fissile siltstone
4.6	red interbedded sandstone and siltstone
3.0	red siltstone
0.6	red feldspathic sandstone, fining-upwards
0.3	red blocky siltstone
1.8	red feldspathic sandstone, white near diabase, fining upwards
1.5	diabase dike
+3	red blocky siltstone, black near diabase
5.0	covered

Thickness (m)	Description
.9	red cross-bedded sandstone and siltstone, fining-upwards
.8	red planer, thin-bedded sandstone
4.0	covered
4.6	red interbedded siltstone and sandstone
2.0	covered
1.2	red burrowed sandstone and siltstone
48.0	covered
.8	red blocky siltstone
1.5	red feldspathic sandstone, strongly downcutting, fining-upwards
3.4	red blocky siltstone
.7	red feldspathic sandstone, fining-upwards, deeply downcutting
.3	red blocky siltstone, covered in places
+1	red fine feldspathic sandstone
Section B	Base of exposure 488 m above and 3.4 km west of top of section A, along Rt. 80 (section measured from top down).
.61	red fissile siltstone
.15	yellow-orange planer-bedded coarse siltstone
.91	red blocky siltstone
.15	yellow-orange cross-bedded base, planer-bedded top, fine sandstone
.20	red blocky siltstone
.30	yellow-orange cross-bedded base, planer-bedded top, fine sandstone
.90	red fissile siltstone
.93	red blocky siltstone, fining-upwards
.32	red fissile siltstone
.60	red siltstone
.76	red fissile siltstone
.60	red coarse feldspathic sandstone, fining-upwards
.30	red blocky siltstone
1.32	red very fine sandstone, fining-upwards
+1.52	red blocky siltstone
Section C	Base of exposure 244 m above and 1.8 km west of top of section B, along Rt. 80 (sections measured from top down).
1.5	red, very irregular, trough cross-bedded sandstone grading upwards into siltstones, laminated carbonate-rich oblong chips and concentric accretions at base
1.5	same as above
Section D	Base of exposure 1320 m above and 6.9 km west of top of section C (section measured from top down).
3.0	red massive, cross-bedded sandstone
Section E	Base of exposure 554 m above and 2.9 km west of top of section D (section measured from top down).
+10.0	massive basalt — base of Orange Mountain Basalt
.9	brown massive sandstone welded to basalt
1.8	red siltstone with numerous small carbonate nodules
.93	red siltstone
1.5	red sandstone, fining-upwards

Type section of the Feltville Formation and key to figure 7. Section exposed along Blue Brook about 1 km southwest of the dam for Lake Surprise in Watchung Reservation, Union County, New Jersey (sections measured from top down).

Unit letter in Figure 7	Thickness (m)	Description
Section A of Figure 7		
a	+1	buff to pink, cross and planer-bedded feldspathic sandstone with interbeds of red siltstone upward grading into
b	+1	red siltstone in thin beds, upper contact sharp
c	+1	same as unit a
d	+1	same as unit b
e	9	< 1 meter thick beds of buff and red sandstone, grading upwards into red blocky siltstone
f	1.5	beds of red siltstone and sandstone with varying amounts of basalt breccia
Section B of Figure 7		
a	.5	greenish-red, slightly micaceous with small scale ripple-bedded siltstone
b	.05	gray, aphanitic, calcareous siltstone
c	.08	same as above with a thin unit of red siltstone between it and unit b
d	.25	red and green, fine bedded siltstone
e	.20	reddish green fine bedded siltstone
f	.05	gray indistinctly bedded very calcareous siltstone
g	.02	gray well bedded calcareous siltstone
h	.08	gray well bedded limestone laminae alternating with siltstone to form 5 mm thick couplets. *Semionotus* common
i	.06	gray aphanitic limestone
j	.05	gray graded beds (1010 mm) of calcareous siltstone
k	.05	similar to unit h, but couplets 2-3 mm. *Semionotus* common
l	.06	similar to above but more silty
m	.08	gray laminated siltstone with limestone laminae present occasionally
n	.46	mottled gray and red clayey siltstone with thin fossil roots. Palyniferous (W. B. Cornet, pers. comm.)
o	.03	gray coarse siltstone
p	.18	gray small scale cross-bedded coarse siltstone with numerous natural casts of reptile footprints on lower contact
q	.18	gray ripple-bedded fine siltstone with numerous reptile footprints
r	.31	gray ripple-bedded coarse siltstone grading into unit q. Reptile footprints common.
s	.08	same as p
t	.14	gray and reddish siltstone with numerous reptile footprints
u	.44	red and gray claystone
v	.05	gray and red siltstone with large dinosaur footprints
w	.13	gray and red siltstone with numerous reptile footprints

Type Section of the Towaco Formation
(measured from top down)
(see Figure 11)

Basal Hook Mountain Basalt and cycle A of Towaco Formation exposed in the "Dinosaur Tract" of the Essex County Park Commission adjacent to the "Nob Hill" condominium project, where cycle B and the upper part of cycle C were exposed prior to 1977 (Olsen, 1975). All these exposures were part of the Roseland Quarry, Roseland, New Jersey.

Unit letter from Figure 16	Thickness	Description
Hook Mountain Basalt. 1st flow	35.0	Tholeiitic Basalt. Massive at base, columnar jointed in middle, vesicular at top.
Towaco Formation Volcanoclastic bed		
a	.9	Brown, badly weathered palagonitic unit consisting of shards of altered glass in a matrix of brown ?radial natrolite when fresh.
Upper Cycle (A)		
b	.5	Light gray and lavender siltstone, locally laminated with small scale cross-bedding. May contain volcanoclastic component.
c	1.2	Dark lavender and maroon siltstone with small scale crossbedding. Small orange crystals (weathered) along fracture planes.
d	1.8	Deep red, hard siltstone grading into units above and below. Contains one fining-upwards cycle with reptile footprints common.
e	29.3	10 red fining-upwards cycles, each a mean of 2.9 m thick and composed of thick beds of red sandstone or coarse siltstone with prominent slip-off surfaces grading up into beds of ripple-bedded siltstone and blocky siltstone. Lowest cycle contains buff intraformational breccia with coprolites, reptile bone fragments, and fish scales. Lower cycles contain numerous calcareous lenticular concretions most common in coarse parts of cycles. Fine parts of middle cycles contain numerous small dolomitic concretions and deep mud cracks. Reptile footprints common in lower and upper cycles, as are root casts.
f	3.4	Gray and buff fining-upwards cycles consisting of a lower, cross-bedded sandstone grading up into lavender and gray siltstone. Reptile footprints and carbonized plants common.
g	1.1	Gray-green fine siltstone massive and indistinctly bedded. Small bits of carbonized stems and leafy twigs common. Palyniferous (Cornet, 1977).
h	.6	Dark to light gray, very fine and fine siltstone with massive to fine bedding and local load casts and ?gypsum crystal impressions. Good plant fragments including several conifer species, *Semionotus* scales and bones, and a single beetle elytron.
i	.4	Black, slickensided very fine siltstone with common chert nodules with a globular fabric.
j	.2	Black laminate. Black carbonaceous siltstone and white carbonate couplets .42 mm thick. Upper part of unit has several 5 mm thick graded, black siltstone layers. Grades into unit i.
k	.3	Light gray clayey siltstone, soft with black laminae becoming common upwards. Grades into unit j.
l	2.5	Gray fining-upward cycle composed of a lower cross-bedded sandstone containing numerous tree limbs, branches and roots grading upwards into a fine, well-bedded siltstone, locally ripple-bedded with numerous reptile footprints. Uppermost portion contains gray-green massive siltstone.
m	.9	Gray-buff, well bedded siltstone with dinosaur footprints and plant roots preserved both as carbonized impressions and natural casts.
Cycle B		
n	4.2	Red, thick fining-upward cycle. Lower part consists of thick beds of red sandstone with slip-off surfaces, local intraformational conglomerates and natural casts of large tree limbs or roots and a possible large reptile jaw. Middle part composed of 5 cm ± fine graded beds with very rare bone fragments and ?dinosaur teeth and exceptionally good reptile footprints. Plant fragments common and preserved as impressions or natural casts. Upper part is fine siltstone and plant remains present either as natural casts or carbonized compressions surrounded by gray-green halos. Grades upward into unit m.

Unit letter from Figure 16	Thickness	Description
All but the top of the following are no longer exposed.		
o	16.8	6. red fining-upwards cycles. Each cycle similar to unit n but a mean thickness of less than 1 meter. Middle 3 cycles contain numerous round dolomitic concretions and deep mudcracks in the fine portions. Reptile footprints common: plant remains (twigs and roots) present as impressions and natural casts.
p	5.2	2 or 3 gray fining-upwards cycles pinching out to the south where only one remains. Lower part of cycle consists of gray and buff cross-bedded sandstone grading upward into fine gray-blue or gray-green siltstone. Uppermost cycle composed of gray sandstones and red siltstones. Plant remains common as carbonized compressions. fine units palyniferous and reptile footprints common.
q	.8	Basal portion is a laminate composed of laminae of dark organic-rich siltstone alternating with light carbonate laminae forming couplets 0.4 mm thick. Upper part of laminate has 5 mm black graded beds. Upper part of unit consists of beds of graded sandstones and siltstones with minor intraformational conglomerate made up of the laminite. *Semionotus* abundantly preserved as articulated compressions in laminite and in three dimensions in the sandstones. Carbonized plant compressions common.
r	.2	Black indistinctly-bedded siltstone. Gradational with unit s.
s	4.9	Olive massive slurried and convoluted bedded coarse poorly sorted siltstones grading upwards into poorly bedded gray-blue siltstones with numerous clasts of unit t throughout. Some recumbent folds over a meter between limbs.
t	.5	Black laminite very similar to laminite of unit q but without *Semionotus*.
u	.6	Light gray or buff clayey siltstone grading into units t and v. Black laminae common upward.
v	3.0	Gray fining-upwards cycle composed of basal coarse. cross-bedded siltstone grading up into fine siltstone. Carbonized fragments of plants present.
w	1.0	Gray small-scale cross-bedded siltstone, grades downward into unit x.
Cycle C		
X	4.3	Red small-scale cross-bedded siltstone.

Table 6

Type section of the Boonton Formation

Top of section exposed just east of the dam for the Jersey City Reservoir in Boonton, New Jersey. Section measured from top down (see Figure 20).

Thickness (m)	Description
+1	Gray coarse to fine siltstone and sandstone (now covered)
+1	Gray laminite composed of laminae of gray siltstone alternating with laminae of carbonate forming couplets of a mean of 2.5 mm. Unit also contains coarse to fine graded siltstones 1 mm to 2.5 cm thick. Fossil fish of 4 genera (see Figure 15) present along with numerous carbonized plant compressions and conchostracans. This is the famous Boonton Fish Bed (unit now covered).
.5	Gray clayey siltstone with common carbonized plant compressions (mostly conifers). Unit palyniferous (Cornet, 1977).
1.2	Gray fining-upwards cycle made up of coarse to fine cross-bedded sandstone grading up into small-scale cross-bedded siltstone. Reptile footprints common.
15.7	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions and reptile footprints present.
3.4	Gray coarse siltstone grading up into fine gray siltstone. Carbonized plant compressions present. Unit palyniferous.
+5	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions present.
ca.20	covered

Thickness (m)	Description
+5	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common (mostly covered).
1.1	Gray fine sandstone to fine conglomerate. Cross-bedded (tongue of Morristown facies).
2.6	Gray clayey siltstone with carbonized plant fragments.
1.4	Gray fine sandstone to conglomerate. cross-bedded with fine siltstone interbeds and carbonized plant fragments (tongue of Morristown facies).
1.6	Gray clayey siltstone with groove casts. Carbonized plant remains present.
+1.5	Gray sandstone and conglomerate, cross-bedded (tongue of Morristown facies).
ca.30	covered
+17.0	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions and reptile footprints present.
.9	Red and gray fine siltstone.
.9	Gray fine siltstone.
1.4	Gray fine sandstone and coarse siltstone: small-scale cross-bedding and carbonized plant fragments present.
+.9	Gray fine siltstone with carbonized plant fragments.
ca.20	covered
+7.9	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions and reptile footprints present.
1.5	Gray fine siltstone with carbonized plant fragments.
3.1	Red siltstone with dolomitic concretions and small-scale cross-bedding.
ca.1	Gray fine siltstone (poorly exposed).
13.8	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions present.
ca.1	Gray fine siltstone (poorly exposed).
1.5	Red siltstone with small-scale cross-bedding.
.8	Gray coarsening upwards siltstone.
6.1	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding and dolomitic concretions common.

REFERENCE NO. 8

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: D. Cohen
DATE: 10/31/89
FROM: A. Culmore
COPIES:
SUBJECT: Clarification of telecon information - telecons attached
REFERENCE: Bergen County EPI PA Sites
Original filed in PA PM File 02-8910-05

1) Public Water Supply Systems -
a) Jersey City Water Dept. - Lyndhurst, Clifton
b) Passaic Valley Water Comm. - Nutley, No. Arlington, Clifton
c) Newark Water Dept. - Bellville
d) Hackensack Water Co. - Rutherford, E. Rutherford, Carlstadt, Moonachie, Wood-Ridge, Hasbrouck Heights, Teterboro, So. Hackensack, Hackensack, Teaneck, Little Ferry, Maywood, Bogota, Ridgefield Park, Ridgefield, Secaucus, Fairview

The above mentioned towns are supplied by surface water ~~supply~~ supplies whose intakes ~~two~~ are not located in the migration pathway or are greater than 3 mi upstream of the site.
AC 10/30/89

The well located at Lyndhurst High School is open to the residents of the town to fill their own jugs.
There are no reported domestic wells located in the communities noted above that are used for potable purposes except Teaneck, Bogota, Ridgefield Park and Hackensack.

(over)

(P1)

NUS 443A 58 1182

Wallington, Lodi, Saddle Brook, Elmwood Park, Garfield, Fairlawn have wells used for public supply purposes. Many of these wells are closed due to contamination. Supplimentary water is purchased from the Passaic Water Valley Water Comm. and the Hackensack Water Co. in these areas.

A. Colman

NUS CORPORATION

TELECON NO

CONTROL NO:	DATE:	TIME:
02-8810-18	11/2/88	0810

DISTRIBUTION:

Avon Sanitary Landfill

BETWEEN:	OF:	PHONE:
Jim Foldo	Bellville Water Dept.	(201) 450-341

AND:

A. Calmne

(NU:

DISCUSSION:

Re: Community Water Supply

From: Newark Water Dept.

surface water reservoirs > 3 mi.

7500 domestic connections

7500 x 3.8 = 28,500 ≈ pop. served

Knows of 3 domestic wells but not currently used. All on community H_2O Supply. Appx. potential pop. 12

3 x 3.8 = 11.4

ACTION ITEMS:

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: File

DATE: 10/20/88

FROM: A. Culmone

COPIES:

SUBJECT: Avon Sanitary LF + Palazzi Bros.

REFERENCE: Personal Interview: Lyndhurst Health Officer, Peter Forte

Health Dept. has no records on either site. their records only date back to 1984. The State monitored the Landfill site.

Lyndhurst Water Dept. buys H_2O from J.C. Water Dept. May also soon purchase additional H_2O from Passaic Valley Water Comm.

There is a public well at Lyndhurst H.S. - operated by Lyndhurst Water Dept. A copy of the 1987 water analyses is attached.

There are other private wells in the area for domestic use. Lyndhurst Water Dept. has this info.

Will have the Fire Inspector contact me on Fri., 10/21 with any info regarding fires or hazardous conditions at these locations.

NUS CORPORATION

TELECON NO

CONTROL NO: 02-8810-18

DATE: 11/3/88

TIME: 11 00

DISTRIBUTION:

Styron Sanitary LF

BETWEEN: Carol Donnelly

OF: Kearny Water Dept.

PHONE: (201)

AND: A. Culmane

DISCUSSION:

Kearny - Water supply - part owner of gravity fed system reservoir in North Jersey District Water Supply - Waraque Res. > 3mi

2 non potable wells ~~with~~ industrial use with back flow check valves
- West Hudson Hospital, 206 Bergen Ave, Kearny permit # 410, James Shaw, Div. Plant Operations
- Clear Cast Div of PPG. 450 Schuyler Ave. permit # 506, Larry S. Caso

4 surface water intakes non-potable industrial usage with back flow check valves
- PSE+G, Hackensack Ave, Kearny permit # 798, Hackensack River

ACTION ITEMS:

Mr. Charles Manzenmaier
- River Terminal Development Co, 100 Central Ave. Kearny, Passaic River permit # 57 Frank Kobola

(over)

- Franklin Plastic's , 113 Passaic Ave., Kearny
  Passaic River, permit # 48

- Monsanto Corp , Pennsylvania Ave., Kearny
  Passaic River, permit # 286, Celso Balan (Tech. Serv. Super.)

Pop' ≈ 37,500
Services ≈ 7500

DEP - James Montgomery, Phys. Connection Program, Bureau Safe Drinking H_2O

NUS CORPORATION

TELECON NOT

CONTROL NO:	DATE:	TIME:
02-8810-18	11/9/88	1135

DISTRIBUTION:

Avon Sanitary LF

BETWEEN:	OF:	PHONE:
Mike Fessler	Veritek Co.	(201) 492-8744

AND: A. Calmone (NUS)

DISCUSSION:

Re: Well at Clear Cast
(Veritek Co. - environmental consultant for Clear Cast)

Well ~~[illegible]~~ depth - appr 200 ft.

Use - cooling water

Geology - unknown - bedrock assummed to be Brunswick

ACTION ITEMS:

NUS CORPORATION

TELECON N

CONTROL NO: 02-8810-18

DATE: 11/4/88

TIME: 1100

DISTRIBUTION:

Avon Landfill

BETWEEN: Bob Noe

OF: No. Arlington Water Dept.

PHONE: (201)

AND: A. Culman

DISCUSSION:

(N

Public Water Supply - Passaic Valley Water Comm.
- surface H_2O Reservoirs >3 mi.
- no municipal wells

Appx. population 18,000

Chas. Agel - H_2O Dept. Supt. will call back Mon. to give any additional info possibly needed.

ACTION ITEMS:

NUS CORPORATION

TELECON NOT

CONTROL NO: 02-8810-18

DATE: 10/31/88

TIME: 1455

DISTRIBUTION:

Avon Sanitary Landfill

BETWEEN: Stu Palfreyman

OF: Health Office Clifton

PHONE: (201) 470-5758

AND: A. Culmore

(NUS

DISCUSSION:

Clifton community water supply is provided by the Passaic Valley Water Comm.

There are 3 potable wells in Clifton

1) Municipal well at 900 Clifton Ave.
2) Brookdale Beverage Corp. 955 Bloomfield Ave.
3) Public ~~Nom~~. Community - Swepco Tube Corp.
1 Clifton Blvd.

The well at City Hall Campus - depth is 150'

Population of Clifton is approx 75,000

ACTION ITEMS:

Contact No. for PVWC
Wendell Imhoffer
340-4300

NUS CORPORATION

TELECON NO

CONTROL NO:	DATE:	TIME:
02-8810-18 NTC28I	10/27/88	1400

DISTRIBUTION:

Avon Sanitary Landfill

BETWEEN:	OF:	PHONE:
Wally Orrego	Lyndhurst H_2O Dept.	(201) 438-377

AND:

A. Culmone

DISCUSSION:

Depth of well - 153'

Depth at which well is screened - 145'

Is it bedrock - yes

90'-110' clay barrier

flow 1.5" - 200 gpm

back up well same general conditions

Kearny, North Arlington - Passaic Valley - , Nutley, Belleville

Rutherford - Hackensack and all towns to the north

Clifton - Jersey City H_2O Dept.

ACTION ITEMS:

02-8810-18

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: File 02-8810-18 NJC2II

DATE: 10/25/88

FROM: A. Culmone

COPIES:

SUBJECT: Public Water Supply + Private Wells Town of Lyndhurst

REFERENCE: Avon Sanitary LF

Personal Interview of Helen Polito, Lyndhurst Water Dept.

Only 1 active well in town - Forest Ave. at the High School.

2nd well currently inactive on Cleveland Ave. but provides potential back-up supply.

All township residents currently on municipal water. No private wells are used.

Water is purchased from the Jersey City Water Dept.

~~Number of connections~~
Lyndhurst Pop. 20,000

NUS 443A 58 1182

NUS CORPORATION

TELECON N[illegible]

CONTROL NO: 02 8810-18

DATE: 11/?/88

TIME: [illegible]

DISTRIBUTION:

Aron Sanitary LF

BETWEEN: Water Dept Foreman

OF: Nutley Public Works Dept.

PHONE: (201) 284-[illegible]

AND: A. Gilmore

DISCUSSION:

Nutley - Passaic Valley Water Comm.
community supply
- surface reservoirs > 3 mi
1 well in town with public access
on Board of Ed. property
depth - 300'
direction of flow W → E
Franklin Ave. + Kennedy (High School)
no connection to public H_2O supply
active
Town Pop. 29,000 ≈
domestic connections ≈ 9000 × 3.8 =
34,200 persons
Contradicting info

ACTION ITEMS:

REFERENCE NO. 9

SUBJECT TO REVISION

WATER WITHDRAWAL POINTS AND NJGS CASE INDEX SITES WITHIN 5.0 MILES OF:

LATITUDE 404731
LONGITUDE 740612

DRAFT

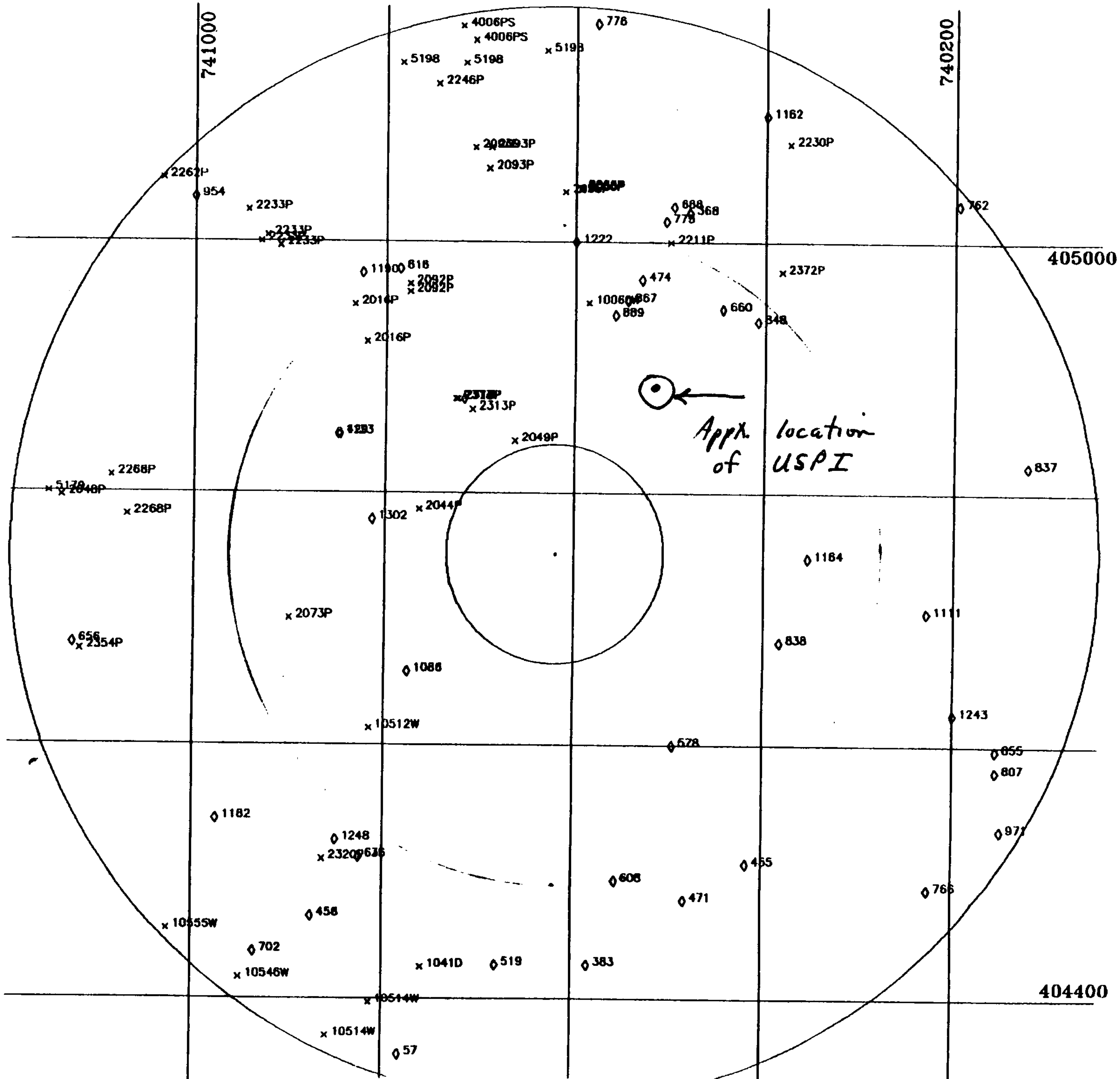
SCALE: 1:63,360
(1 Inch = 1 Mile)

× WATER WITHDRAWAL POINTS
◊ NJGS CASE INDEX SITES
1 MILE AND 5 MILE RADII INDICATED

NJGS CASE INDEX DATA RETRIEVED FROM:
NEW JERSEY GEOLOGICAL SURVEY
ON 12/22/87

PLOT PRODUCED BY:
NJDEP
DIVISION OF WATER RESOURCES
BUREAU OF WATER ALLOCATION
CN-029
TRENTON, NJ 08625

DATE: 10/18/88



NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GEO1	GEO2	CAPACITY
5179	BLOOMFIELD TOWN	2604763	1	404800	741130	T	4.7	13	02	380	GTRB		330
2048P	NATIONAL STARCH & CHEMICAL	2604314	1	404758	741122	T	4.6	13	02	410	GTRB		200
2354P	ESSEX COUNTY DEPT. OF PARKS	2604894	2	404645	741110	T	4.4	13	14	450	GTRB		180
2268P	FOREST HILL FIELD CLUB	POND		404808	741051	F	4.1	13	02	14	SP		1200
2268P	FOREST HILL FIELD CLUB	2604258	1	404749	741041	S	3.9	13	02	238	GTRB		60
2262P	UPPER MONTCLAIR COUNTRY CLUB	2604825	3	405030	741020	T	5.0	31	02	300	GTRB		60
10555W	NEW JERSEY BELL TEELEPHONE	2603173	1	404433	741015		4.9	13	14	215	GTRB		80
10546W	PUBLIC SERVICE ELECTRIC & GAS	4600103	1	404410	740930	F	4.8	17	04	216	GTRB		250
2233P	HOFFMANN-LAROCHE INC.	4600156	32	405015	740927	F	4.2	31	02	650	GTRB		260
2233P	HOFFMANN-LAROCHE INC.	4600155	20	405000	740919	F	3.9	13	16	402	GTRB		100
2233P	HOFFMANN-LAROCHE INC.	4600157	33	405003	740915	F	3.9	31	02		GTRB		165
2233P	HOFFMANN-LAROCHE INC.	4600158	37	404958	740907	F	3.8	31	02	720	GTRB		300
2073P	INTERNATIONAL MINERALS & CHEM.	4600092	1	404700	740900	T	2.5	13	01	352	GTRB		100
2073P	INTERNATIONAL MINERALS & CHEM.	4600093	2	404700	740900	T	2.5	13	01	400	GTRB		150
2073P	INTERNATIONAL MINERALS & CHEM.	2605113	3	404700	740900	T	2.5	13	01	400	GTRB		150
2320P	HONEYCOMB PLASTICS CORP.	4600182	1	404506	740838	S	3.5	17	07	500	GTRB		210
2320P	HONEYCOMB PLASTICS CORP.	2602384	2	404506	740838	S	3.5	17	07	700	GTRB		500
10514W	RONSON METALS CORP.	2604993	3	404342	740835	T	4.9	13	14	165			100
2016P	ITT AVIONICS DIVISION	2601834	1	404930	740820	T	2.9	13	16	500	GTRB		150
2016P	ITT AVIONICS DIVISION	2601835	2	404930	740820		2.9	13	16	450	GTRB		150
2016P	ITT AVIONICS DIVISION	2601905	3	404930	740820		2.9	13	16	500	GTRB		150
2016P	ITT AVIONICS DIVISION	2604692	4/SEALED	404912	740812		2.6	13	16	500	GTRB		200
10512W	V.H. SWENSON CO., INC.	2602717	1	404608	740809	F	2.3	17	07	400	GTRB		150
10514W	RONSON METALS CORP.	2603408	1	404358	740808	T	4.4	13	14	300	GTRB		150
5198	WALLINGTON BOROUGH	4600075	8	405125	740750		4.7	03	65	503	GTRB		80
5198	WALLINGTON BOROUGH	4600074	5	405125	740750		4.7	03	65	506	GTRB		150
2092P	GIVAUDAN CORPORATION	4600006	6	404936	740745	F	2.7	31	02	297	GTRB		235
2092P	GIVAUDAN CORPORATION	4600007	7	404940	740745	F	2.8	31	02	250	GTRB		110
2044P	GRAND UNION CO.	4600002		404752	740738	S	1.3	03	39	300	GTRB		80
1041D	AMERICAN REF-FUEL COMPANY	175 WELL	POINTS	404415	740735	F	3.9	13	14	35	GOSD		250
2246P	FARMLAND DAIRIES INC.	2604169	1	405115	740727	U	4.4	03	65	300	GTRB		200
2246P	FARMLAND DAIRIES INC.	2304250	2	405115	740727	U	4.4	03	65	300	GTRB		185
2313P	FENCO OF LYNDHURST INC.	4600173	2	404845	740715		1.7	03	32	313	GTRB		185
2313P	FENCO OF LYNDHURST INC.	2601699	3	404845	740715	F	1.7	03	32	410	GTRB		150
2313P	FENCO OF LYNDHURST INC.	4600172	1	404845	740714		1.7	03	32	267	GTRB		110
4006FS	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	OKONITE CO	405143	740712	T	4.9	31	07		SP		
5198	WALLINGTON BOROUGH	2603027	LESTER ST	405125	740710		4.6	03	65	400	GTRB		130
2313P	FENCO OF LYNDHURST INC.	2603804	4	404840	740705	F	1.5	03	32	352	GTRB		185
2093P	ORVAL KENT FOOD COMPANY, INC.	2604317	1	405045	740704	F	3.8	03	12	580	GTRB		150
4006FS	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	TUCK IND.	405136	740704	T	4.7	31	07		SP		
2093P	ORVAL KENT FOOD COMPANY, INC.	2604382	3	405035	740655	T	3.6	03	12	470	GTRB		430
2093P	ORVAL KENT FOOD COMPANY, INC.	2604341	2	405045	740654	S	3.8	03	12	300	GTRB		150
2049P	SIKA CORPORATION	2604036	1	404825	740638		1.1	03	32	302	GTRB		220
5198	WALLINGTON BOROUGH	2603933	DUL	405131	740619		4.6	03	65	400	GTRB		140
2055P	GANES CHEMICAL, INC.	2600005	4	405024	740607	F	3.3	03	05	526	GTRB		80
2055P	GANES CHEMICAL, INC.	4600080	2	405026	740557	F	3.4	03	05	490	GTRB		200
2055P	GANES CHEMICAL, INC.	2604277	5	405025	740557	F	3.3	03	05	430	GTRB		30
10060W	CARLSTDADT-E. RUTHERFORD B.O.E	2603920	1	404931	740552	F	2.3	03	12	225	GTRB		125
2211P	HENKEL PROCESS CHEMICALS, INC.	4600125	1	405000	740500		3.0	03	05	170	GOSD		600
2372P	YOO-HOO CHOCOLATE BEV. CORP.	2602067	1	404946	740350		3.3	03	05	303	GTRB		90
2372P	YOO-HOO CHOCOLATE BEV. CORP.	2602933	2	404946	740350		3.3	03	05	393	GTRB		50
2372P	YOO-HOO CHOCOLATE BEV. CORP.	2603053	3	404946	740350		3.3	03	05	378	GTRB		55
2230P	HOFFMAN LAROCHE INC.	2406268	1	405047	740345	[illegible]	4.3	41	03	140	GO		700

 PRELIMINARY SURVEY OF WATER WITHDRAWAL POINTS WITHIN 5.0 MILES OF 404731 LAT. 740612 LON. (IN ORDER BY PERMIT NUMBER) - 10/18/88

NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GEO1	GEO2	CAPACITY
10060W	CARLSTADT-E. RUTHERFORD B.O.E	2603920	1	404931	740552	F	2.3	03	12	225	GTRB		125
1041D	AMERICAN REF-FUEL COMPANY	175 WELL	POINTS	404415	740735	F	3.9	13	14	35	GOSD		250
10512W	V.H. SWENSON CO., INC.	2602717	1	404608	740809	F	2.3	17	07	400	GTRB		150
10514W	RONSON METALS CORP.	2603408	1	404358	740808	T	4.4	13	14	300	GTRB		150
	RONSON METALS CORP.	2604993	3	404342	740835	T	4.9	13	14	165			100
10546W	PUBLIC SERVICE ELECTRIC & GAS	4600103	1	404410	740930	F	4.8	17	04	216	GTRB		250
10555W	NEW JERSEY BELL TEELEPHONE	2603173	1	404433	741015		4.9	13	14	215	GTRB		80
2016P	ITT AVIONICS DIVISION	2601834	1	404930	740820	T	2.9	13	16	500	GTRB		150
	ITT AVIONICS DIVISION	2601835	2	404930	740820		2.9	13	16	450	GTRB		150
	ITT AVIONICS DIVISION	2601905	3	404930	740820		2.9	13	16	500	GTRB		150
	ITT AVIONICS DIVISION	2604692	4/SEALED	404912	740812		2.6	13	16	500	GTRB		200
2044P	GRAND UNION CO.	4600002		404752	740738	S	1.3	03	39	300	GTRB		80
2048P	NATIONAL STARCH & CHEMICAL	2604314	1	404758	741122	T	4.6	13	02	410	GTRB		200
2049P	SIKA CORPORATION	2604036	1	404825	740638		1.1	03	32	302	GTRB		220
2055P	GANES CHEMICAL, INC.	4600080	2	405026	740557	F	3.4	03	05	490	GTRB		200
	GANES CHEMICAL, INC.	2600005	4	405024	740607	F	3.3	03	05	526	GTRB		80
	GANES CHEMICAL, INC.	2604277	5	405025	740557	F	3.3	03	05	430	GTRB		30
2073P	INTERNATIONAL MINERALS & CHEM.	4600092	1	404700	740900	T	2.5	13	01	352	GTRB		100
	INTERNATIONAL MINERALS & CHEM.	4600093	2	404700	740900	T	2.5	13	01	400	GTRB		150
	INTERNATIONAL MINERALS & CHEM.	2605113	3	404700	740900	T	2.5	13	01	400	GTRB		150
2092P	GIVAUDAN CORPORATION	4600006	6	404936	740745	F	2.7	31	02	297	GTRB		235
	GIVAUDAN CORPORATION	4600007	7	404940	740745	F	2.8	31	02	250	GTRB		110
2093P	ORVAL KENT FOOD COMPANY, INC.	2604317	1	405045	740704	F	3.8	03	12	580	GTRB		150
	ORVAL KENT FOOD COMPANY, INC.	2604341	2	405045	740654	S	3.8	03	12	300	GTRB		150
	ORVAL KENT FOOD COMPANY, INC.	2604382	3	405035	740655	T	3.6	03	12	470	GTRB		430
2211P	HENKEL PROCESS CHEMICALS, INC.	4600125	1	405000	740500		3.0	03	05	170	GOSD		600
2230P	HOFFMAN LAROCHE INC.	2406268	1	405047	740345	T	4.3	41	03	140	GO		700
2233P	HOFFMANN-LAROCHE INC.	4600155	20	405000	740919	F	3.9	13	16	402	GTRB		100
	HOFFMANN-LAROCHE INC.	4600156	32	405015	740927	F	4.2	31	02	650	GTRB		260
	HOFFMANN-LAROCHE INC.	4600157	33	405003	740915	F	3.9	31	02		GTRB		165
	HOFFMANN-LAROCHE INC.	4600158	37	404958	740907	F	3.8	31	02	720	GTRB		300
2246P	FARMLAND DAIRIES INC.	2604169	1	405115	740727	U	4.4	03	65	300	GTRB		200
	FARMLAND DAIRIES INC.	2304250	2	405115	740727	U	4.4	03	65	300	GTRB		185
2262P	UPPER MONTCLAIR COUNTRY CLUB	2604825	3	405030	741020	T	5.0	31	02	300	GTRB		60
2268P	FOREST HILL FIELD CLUB	2604258	1	404749	741041	S	3.9	13	02	238	GTRB		60
	FOREST HILL FIELD CLUB	POND		404808	741051	F	4.1	13	02	14	SP		1200
2313P	PENCO OF LYNDHURST INC.	4600172	1	404845	740714		1.7	03	32	267	GTRB		110
	PENCO OF LYNDHURST INC.	4600173	2	404845	740715		1.7	03	32	313	GTRB		185
	PENCO OF LYNDHURST INC.	2601699	3	404845	740715	F	1.7	03	32	410	GTRB		150
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	HONEYCOMB PLASTICS CORP.	2602384	2	404506	740838	S	3.5	17	07	700	GTRB		500
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	YOO-HOO CHOCOLATE BEV. CORP.	2602933	2	404946	740350		3.3	03	05	393	GTRB		50
	YOO-HOO CHOCOLATE BEV. CORP.	2603053	3	404946	740350		3.3	03	05	378	GTRB		55
4006PS	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	OKONITE CO	405143	740712	T	4.9	31	07		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	TUCK IND.	405136	740704	T	4.7	31	07		SP		
5179	BLOOMFIELD TOWN	2604763	1	404800	741130	T	4.7	13	02	380	GTRB		330
5198	WALLINGTON BOROUGH	2603933	DUL	405131	740619		4.6	03	65	400	GTRB		140
	WALLINGTON BOROUGH	2603027	LESTER ST	405125	740710		4.6	03	65	400	GTRB		130
	WALLINGTON BOROUGH	4600075	8	405125	740750		4.7	03	65	503	GTRB		80
	WALLINGTON BOROUGH	4600074	5	405125	740750		4.7	03	65	506	GTRB		150

REFERENCE NO. 10

0004 F
02-8910

PRELIMINARY ASSESSMENT
OFF SITE RECONNAISSANCE
INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: United States Printing Ink TDD: 02-8910-32

Site Address: 343 Murry Hill Parkway
Street, Box, etc.

E. Rutherford
Town

Bergen
County

NJ
State

NUS Personnel:

Name	Discipline
A. Culmone	Env. Scientist
J. Harrison	Technician
J. Reickhoff	Biologist

Weather Conditions (clear, cloudy, rain, snow, etc.):

clear, 48°F at 10/26/89, early morning haze

Estimated wind direction and wind speed: 0-5 mph SW

Estimated temperature: 48°F

Signature: Anthony F. Culmone Jr. Date: 10/26/89

Countersigned: [signature] Date: 10/26/89

PRELIMINARY ASSESSMENT

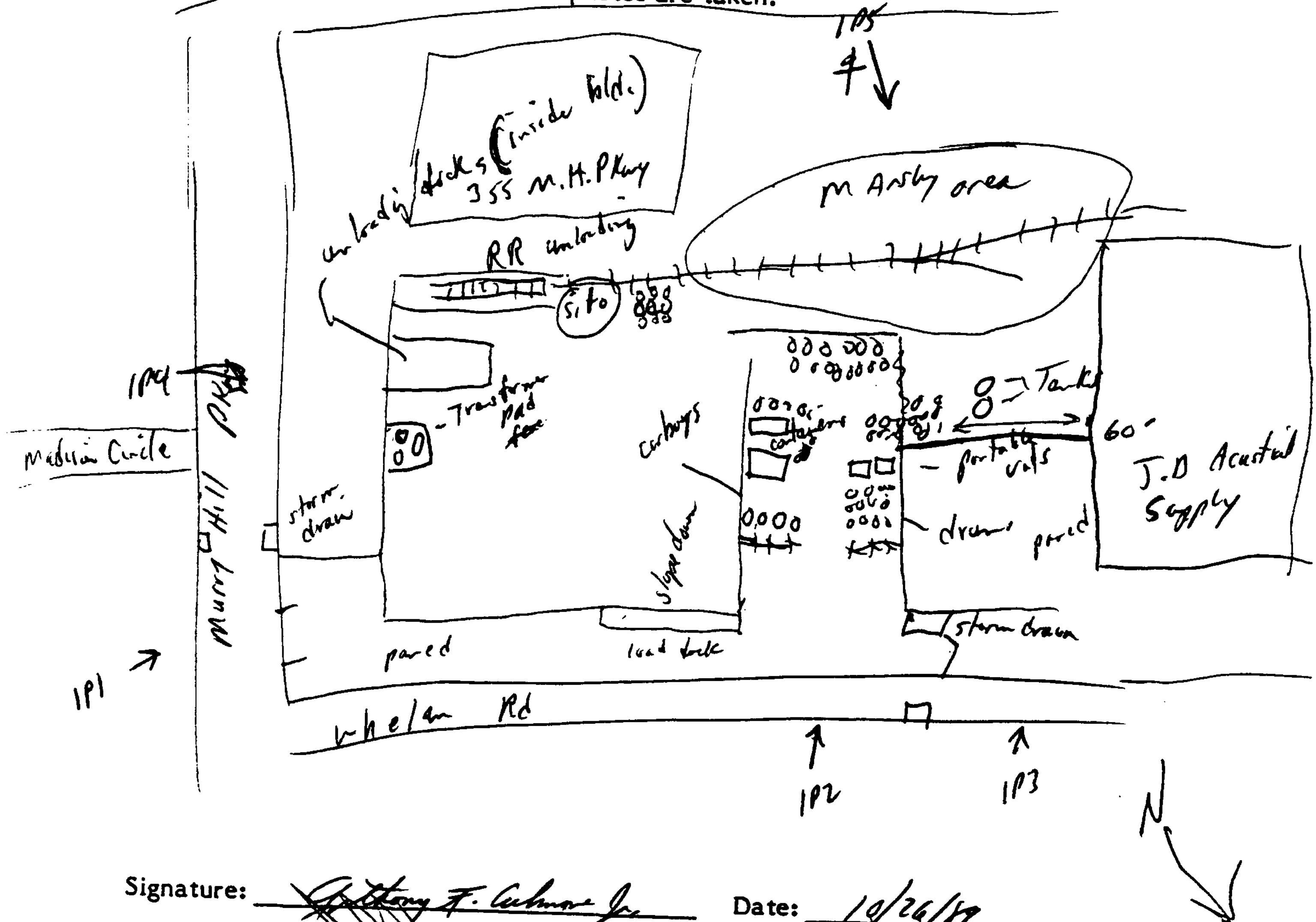
INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: United States Printing Ink TDD: 02-8910-32

Site Sketch: Dranca Rd

Indicate relative landmark locations (streets, buildings, streams, etc.).
Provide locations from which photos are taken.



Signature: Anthony F. Cashmore Jr. Date: 10/26/89

Countersigned: [signature] Date: 10/26/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: United States Printing Ink TDD: 02-8910-32

Notes (Periodically indicate time of entries in military time):

Arrive at site 0820, Grounds facing public area well kept. Site Active. Facility slope less than 3%

0830 Asphalt pavement in drum storage area fence with open gate, many drums stacked 4 tiers, 250-300 drums & carboys no dykes or berms unknown if drums have covers. No signs of stressed biota.

0835 Drainage apparently flows to marshland appx 300' to west along Whelan Rd.

0840 Observed transfer of pesticide area for RR cars and tankers on SE corner of Bld.

0845 Went down Branca Rd. only could see tanks at west side of property

0850 Left site.

Signature: Anthony T. Palmore Jr. Date: 10/26/89

Countersignature: [illegible] Date: 10/26/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: United States Printing Ink TDD: 02-8910-~~09~~ 32 AC 10/26/89

Notes (Cont'd):

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Anthony F. Culnan Jr. Date: 10/26/89

Countersignature: [signature] Date: 10/26/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: United States Printing Ink TDD: 02-8910-32

Photolog:

Frame/Photo Number	Date	Time	Photographer	Description
1P1	10/26/89	0822	J. Harrison	view from Murray Hill Pkwy looking westerly at front of bld
1P2	10/26/89	0831	J. Harrison	view of drum storage area from Whelan Rd
1P3	10/26/89	0833	J. Harrison	View of of additional tanks and drums from Whelan Rd
1P4	10/26/89	0839	J. Harrison	View SE corner of bld. loading dock + Transformer + RR
1P5	10/26/89	0849	J. Harrison	View from Araca Rd of tanks at rear of bld.

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: [signature] Date: 10/26/89

Countersignature: [signature] Date: 10/26/89

UU05T
02-8910-3

PRELIMINARY ASSESSMENT
OFF SITE RECONNAISSANCE
INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: United States Printing Ink TDD: 02-8910-32

Site Address: 343 Murry Hill Pkwy
Street, Box, etc.

E. Rutherford
Town

Bergen
County

NJ
State

NUS Personnel:

Name	Discipline
A. Colmore	Env. Scientist
J. Rieckhoff	Env. Scientist
B. Yeager	Field Tech.

Weather Conditions (clear, cloudy, rain, snow, etc.):

Clear ~~appx~~ 20°F winds SW 5-10mph

Estimated wind direction and wind speed: SW 5-10mph

Estimated temperature: 20°F

Signature: Anthony F. Colmore Jr. Date: 12/15/89

Countersigned: John D Rieckhoff Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: U.S. Printing Ink Co. TDD: 02 8910-32

Site Sketch:

Indicate relative landmark locations (streets, buildings, streams, etc.).
Provide locations from which photos are taken.

See recon 10/26/89

Signature: Anthony F Colmore Jr. Date: 12/15/89

Countersigned: [signature] Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: U.S. Printing Ink Co. TDD: 02-8910-32

Notes (Periodically indicate time of entries in military time):

At site 0754

Went to site to retake photos since photos on the original recon did not come out

Left site 0806

Signature: Anthony F. Calmone Jr. Date: 12/18/89

Countersignature: John D. Kirchhoff Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: U.S. Printing Ink

TDD: 02-8910-32

Notes (Cont'd):

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Anthony T. Calabrese Jr. Date: 12/15/89

Countersignature: [signature] Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: U.S. Printing Ink TDD: 02-8910-32

Photolog:

Frame/Photo Number	Date	Time	Photographer	Description
1P10	12/15/89	0755	A. Calmon	View from Murray Hill Pkwy looking westerly at front of Bld
1P11	12/15/89	0757	A. Calmon	View of drum storage area from Whelan Rd
1P12	12/15/89	0759	A. Calmon	View of additional tank area and drums from Whelan Rd
1P13	12/15/89	0801	A. Calmon	View of tanks at rear of bdd. from Branca Rd
1P14	12/15/89	~~0803~~ 0803	A. Calmon	View of S side of facility from Branca Rd behind 775 MH Pkwy
1P15	12/15/89	0805	A. Calmon	loading docks and transformer & RR unloading SE corner of Bld.

Note picture locations of P4 & 5 switched sequence from original record for P13 & P15

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Anthony T. Calmon Jr. Date: 12/15/89

Countersignature: John P. [illegible] Date: 12/15/89

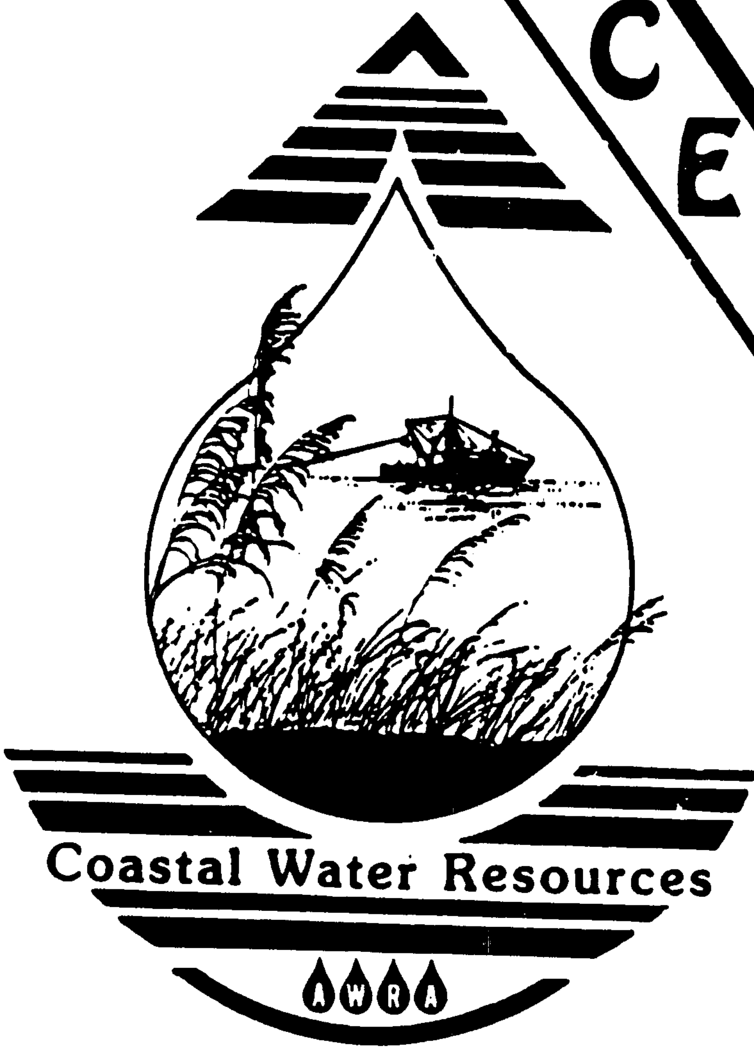
REFERENCE NO. 11

NEAREST WELL
NEAREST SURFACE WATER
PASSAIC
GARFIELD
LODI
HACKENSACK
BOGOTA
HASBROUCK HEIGHTS
SOUTH HACKENSACK
WALLINGTON
WOOD-RIDGE
TETERBORO AIRPORT
LITTLE FERRY
Moonachie
CARLSTADT
EAST RUTHERFORD
RUTHERFORD
LYNDHURST
NORTH ARLINGTON
NUTLEY
BELLEVILLE
SECAUCUS
KEARNY
Walden Swamp
Berrys Creek
HACKENSACK RIVER
PASSAIC RIVER
INTERCHANGE 18W
INTERCHANGE 16W
SCALE 1:24000
1 MILE
7000 FEET
1 KILOMETER
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
NUS CORPORATION
TITLE: THREE MILE VICINITY MAP
SITE :
UNITED STATES PRINTING INK
EAST RUTHERFORD, N.J.
DATE : 01/12/90
TDD : 02-8910-32
QUAD : WEEHAWKEN, N.J.
FIGURE NUMBER:
SCALE: 1"= 2000'

REFERENCE NO. 12

AWRA Symposium on Coastal Water Resources

PROCEEDINGS



Wilmington, North Carolina

TRENDS IN THE WATER QUALITY OF AN URBAN ESTUARY: HACKENSACK MEADOWLANDS, NEW JERSEY

Christine Cheng, Edward Konsevick[1]

ABSTRACT: The Hackensack Meadowlands Development Commission (HMDC), a New Jersey state planning agency, has been conducting a summer water quality program since 1971. Sampling sites on the tidal portion of the Hackensack River and its tributaries have been monitored for thirteen parameters. The data generated has allowed the HMDC to assess trends in a perturbed urban estuary over time. Parametric and non-parametric statistical analysis reveal that the system maintains the capacity to buffer stress. Comparing our results to precipitation allowed us to measure to what extent natural cycles influence water quality.
(KEY TERMS: Estuary; water quality; trends; parametric and non-parametric statistical analysis.)

INTRODUCTION

The Hackensack Meadowlands District encompasses almost 20,000 acres of tidal marshes and upland less than six miles west of Midtown Manhattan. Neglected and relatively undeveloped, it increased in value as surrounding land succumbed to haphazard growth. Recent uses have ranged from futile attempts at tide control, to the siting of power generating, chemical processing, metal finishing, and municipal water treatment facilities along the banks of the river and its tributaries. The area also serves as a repository for solid waste, and is criss-crossed by an extensive urban transportation network.

Enabling legislation in 1969 established a development commission whose mandate included balancing development with ecological considerations. The collection of water quality information commenced almost immediately, documenting the extent of past abuse. A continuation of this program allows one to trace the effect of concerted efforts on the part of regulatory agencies on a perturbed urban estuary. Previous reports include, "Water Quality in a Disordered Ecosystem (HMDC, 1970)," and "Water Quality in a Recovering Ecosystem (HMDC, 1976)." This report will examine the data generated from 1978 to 1987, relying on statistical analysis in order to depict trends over this period.

Study Area

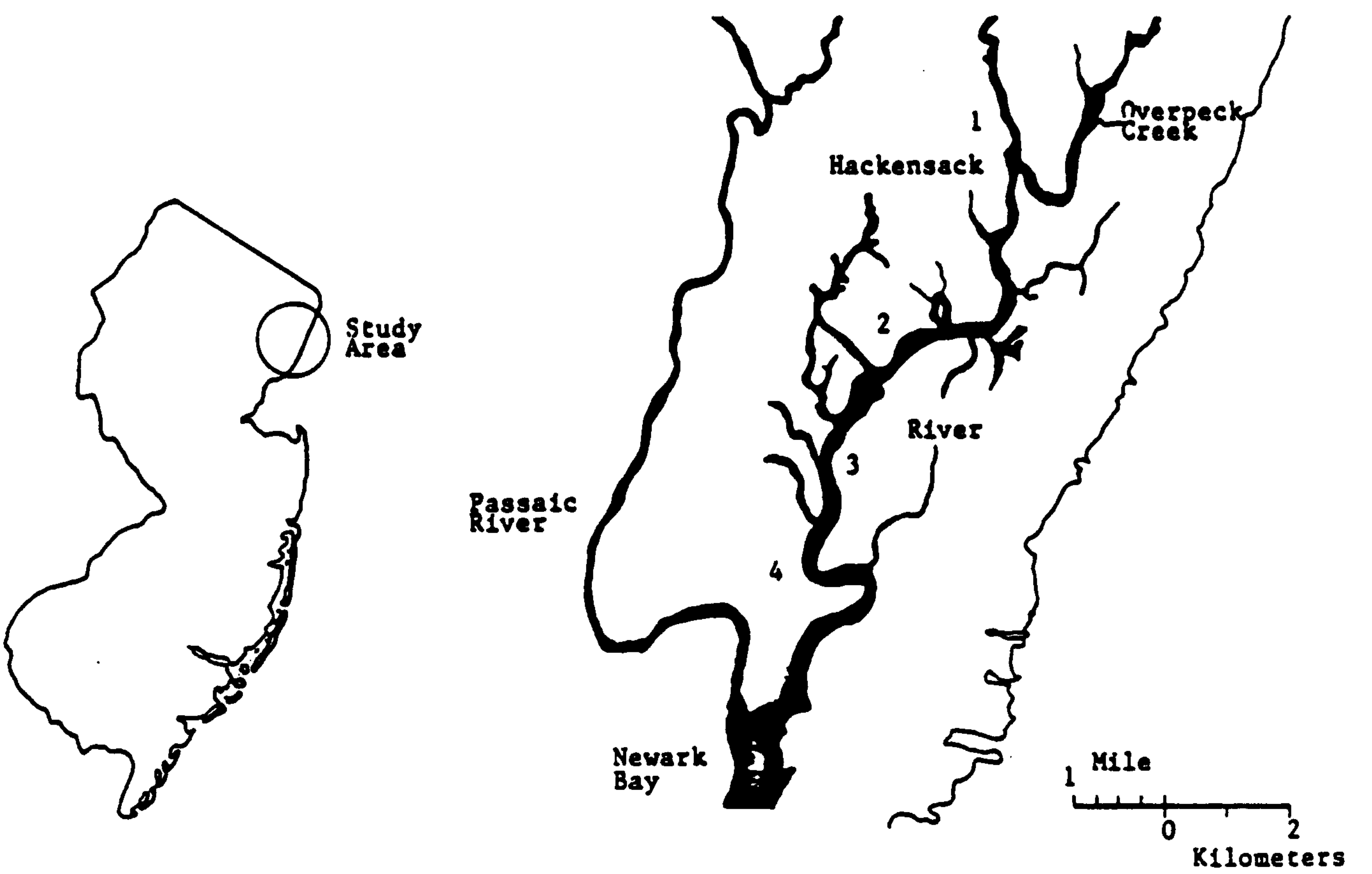
Situated within the Piedmont physiographic province in Northeastern New Jersey, the tidal portion of the Hackensack River drains an area of 93 square miles over a reach of 22 miles before its confluence with the Passaic River at Newark Bay. Approximately one third of this area falls within the Hackensack Meadowlands Land Use Control District,

[1] Respectively, Water Quality Specialist and Supervisor of Laboratory Operations and Research, Hackensack Meadowlands Development Commission, Two DeKorte Park Plaza, Lyndhurst, New Jersey 07071.

which includes over 6,000 acres of wetlands. The vegetation and tidal regime are consistent with a mid-Atlantic saltmarsh, containing mudflats, halophyte dominant marshes, salinity ranging from 0-15 ppt., and semi-dirunal tides in the main watercourse.

Suszkowski (1978) estimated freshwater flow to Newark Bay at the mouth of the Hackensack at 9.2 m^3/sec, 40 percent from wastewater discharges. Another estimate (HMDC, 1976), places the relative contribution of wastewater ten percent lower, the balance made up of water released from an upstream reservoir (20%) and precipitation (50%). The New Jersey Department of Environmental Protection monitors 7 municipal treatment facilities among the 50 discharge permittees in this District. The largest treatment plant is situated directly on the river at river mile 12.7. Its contribution is 2.8 m^3/sec of secondary treatment effluent. Two power generating stations utilize over a billion gallons a day as cooling water. Yet the river classification allows secondary contact recreation and the maintenance and propogation of natural biota. An active boating, trapping and hunting community exists, and it is not unusual to encounter the harvesting of killifish to be used elsewhere as bait.

Map 1: Study Area - Hackensack Meadowlands



The four sampling sites yielding data for this report cover ten miles of the river. Three of the stations are spaced at two mile intervals starting three miles north of the mouth. The last station is thirteen river miles from Newark Bay, well within the tidal reach of the river (Map 1). The depth of the channel at mean low water ranges from 16 to

REFERENCE NO. 13

Newark

N. J.–N. Y.–PA.

1:250 000-scale map of

Atlantic Coast Ecological Inventory

BIRDS (401-600)

SHOREBIRDS (401-430)

401 Shorebirds
402 Terns
403 Gulls
404 Forster's tern
405 Arctic tern
406 Least tern (S)
407 Roseate tern (S)
408 Common tern
409 Great black-backed gull
410 Herring gull
411 Laughing gull
412 Black skimmer (S)
413 Turnstones
414 Plovers
415 Piping plover
416 American oystercatcher (S)

WADING BIRDS (431-460)

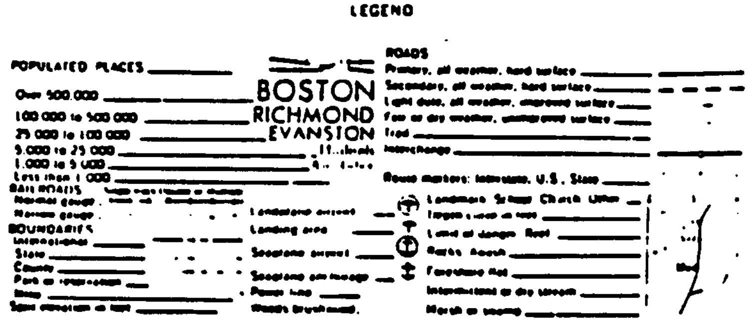
431 Wading birds
432 Herons
433 Egrets
434 Rails
435 Ibises
436 Bitterns
437 Great blue heron (S)
438 Wood ibis (S)
439 Anhinga
440 Little blue heron (S)
441 Yellow-crowned night heron (S)
442 Black-crowned night heron
443 Florida sandhill crane (S)
444 Louisiana heron (S)
445 Limpkin (S)
446 Roseate spoonbill (S)
447 Snowy egret (S)
448 Magnificent frigate-bird (S)
449 Reddish egret (S)
450 Clapper rail
451 King rail
452 Virginia rail
453 Sora rail

Produced by
U. S. FISH AND WILDLIFE SERVICE
1980

Produced by U. S. Fish and Wildlife Service

Base map prepared by U. S. Geological Survey 1969

Atlantic coast ecological inventory compiled in 1980 by Fish and Wildlife Service from data furnished by Federal agencies, State agencies, and other sources. Map scale limitation precludes the portrayal of all available information on species occurrence and distribution. A detailed text—Atlantic Coast Ecological Inventory—is available from Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402




NEWFOUNDLAND 5 MI.
WANAQUE 2 MI.
8 MI. TO U.S. 202
2 100 000 FEET (N.J.)
3 000 000 FEET (PA NORTH)
74°00'
41°00'
700 000 FEET (N.J.)
NEW YORK CITY 4 MI
NEW YORK CITY 5 MI.
Marcella
Kinnelon
Splitrock Reservoir
Butler
Pompton Lakes
Pines Lake
Franklin Lake
Midland Park
Westwood
Emerson
Oradell Res
Pompton Plains
Pequannock
Lincoln Park
RIDGEWOOD
Glen Rock
Hawthorne
Dumont
Oradell
Hibernia
Aircraft Radio Corp
Taylortown
Towaco
White Meadow Lake
WAYNE
PATERSON
FAIR LAWN
BERGENFIELD
Mountain Lakes
Boonton
Totowa
Denville
Lake Hiawatha
Boonton Res
Fairfield
Little Falls
LODI
GARFIELD
TEANECK
Caldwell Wright
CLIFTON
Parsippany
Caldwell
PASSAIC
Little Ferry
MONTCLAIR
Whippany
Morris Plains
Cedar Knolls
Verona
Glen Ridge
NUTLEY
Rutherford
Morristown
BLOOMFIELD
BELLEVILLE
EDISON NAT HIST SITE
North Arlington
Florham Park
LIVINGSTON
WEST ORANGE
EAST ORANGE
KEARNY
WEST NEW YORK
Madison
ORANGE
UNION CITY
HOBOKEN
New Vernon
Green Village
Chatham
Maplewood
NEWARK
STATUE OF LIBERTY NATIONAL MONUMENT
GREAT SWAMP N W R
Summit
IRVINGTON
JERSEY CITY
New Providence
UNION
MORRIS CO
UNION CO
Lookout Tower
Liberty Island
Governors Island
Berkeley Heights
BAYONNE
UPPER NEW YORK BAY
Sterling
Scotch Plains
CRANFORD
ELIZABETH
Roselle
Garwood
Watchung
WESTFIELD
LINDEN
New Brighton
NEW YORK
Fanwood
North Plainfield
PLAINFIELD
RAHWAY
UNION CO
MIDDLESEX CO
Dunellen
STATEN ISLAND
FT WADSWORTH U S MIL RES
New Dorp
Iselin
Coney I
Middlesex
Carteret
Hoffman Island
Midland Beach
Sea Gate
Woodbridge
Swinburne Island
GATEWAY NATIONAL RECREATION AREA
LOWER NEW YORK BAY
Metuchen
Great Kills
Great Kills Harbor
CAMP KILMER U S MIL RES
Highland Park
NEW BRUNSWICK
RICHMOND CO
MONMOUTH CO
NEW YORK
NEW JERSEY
GATEWAY NATIONAL RECREATION AREA
South Amboy
RARITAN BAY
SANDY HOOK
SAYREVILLE
Lawrence Harbor
Keansburg
East Keansburg
FT HANCOCK U S MIL RES
Milltown

REFERENCE NO. 14

Surface Water Classifications

Surface Water Quality Standards
N.J.A.C. 7:9-4

Index D-
Surface Water Classifications of the Passaic, Hackensack and N.Y. Harbor Complex Basin

July 1985

State of New Jersey Department of Environmental Protection/Division of Water Resources

INDEX D - Surface Water Classifications of the Passaic, Hackensack and N.Y. Harbor Complex Basin

ARTHUR KILL	
(Perth Amboy) - The Kill and its saline New Jersey tributaries between the Outerbridge Crossing and a line connecting Ferry Pt., Perth Amboy to Wards Pt., Staten Island, N.Y.	SE2
(Elizabeth) - From an east-west line connecting Elizabethport with Bergen Pt., Bayonne to the Outerbridge Crossing	SE3
(Woodbridge) - All freshwater tributaries	FW2-NT
BEAR SWAMP BROOK (Mahwah) - Entire length	FW2-TP(C1)
BEAR SWAMP LAKE (Ringwood)	FW2-NT(C1)
BEAVER BROOK (Meriden) - Entire length	FW2-NT
BELCHER CREEK (W. Milford) - Entire length	FW2-NT
BERRYS CREEK (Secaucus) - Entire length	FW2-NT/SE2
BLACK BROOK	
(Meyersville) - Entire length, except segment described below	FW2-NT
(Great Swamp) - Segment and tributaries within the Great Swamp National Wildlife Refuge	FW2-NT(C1)
BLUE MINE BROOK	
(Wanaque) - Entire length, except segment described below	FW2-TM
(Norvin Green State Forest) - That portion of the stream and any tributaries within Norvin Green State Forest	FW2-TM(C1)
BRUSHWOOD POND (Ringwood)	FW2-NT(C1)
BUCKABEAR POND (Newfoundland) - Pond, its tributaries and connecting stream to Clinton Reservoir	FW2-NT(C1)
CANISTEAR RESERVOIR (Vernon)	FW2-TM
CANISTEAR RESERVOIR TRIBUTARY (Vernon) - The southern branch of the eastern tributary to the Reservoir	FW1
CANOE BROOK (Chatham) - Entire length	FW2-NT
CEDAR POND (Clinton) - Pond and all tributaries	FW1
CHARLOTTEBURG RESERVOIR (Charlotteburg)	FW2-TM
CHERRY RIDGE BROOK	
(Vernon) - Entire length, except segments described below	FW2-NT
(Canistear) - Brook and tributaries upstream of Canistear Reservoir located entirely within the boundaries of Wawayanda State Park and the Newark Watershed lands	FW1
CLINTON BROOK	
(Mossmans Brook) (W. Milford) - Source to, but not including, Clinton Reservoir	FW2-NT(C1)
(Newfoundland) - Clinton Reservoir dam to Pequannock River	FW2-TP(C1)
CLINTON RESERVOIR (W. Milford)	FW2-TM(C1)
CLOVE BROOK - See STAG BROOK	

(c) In all FW2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;
2. Primary and secondary contact recreation;
3. Industrial and agricultural water supply;
4. Public potable water supply after such treatment as required by law or regulation; and
5. Any other reasonable uses.

(d) In all SE1 waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;
2. Maintenance, migration and propagation of the natural and established biota;
3. Primary and secondary contact recreation; and
4. Any other reasonable uses.

(e) In all SE2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;
2. Migration of diadromous fish;
3. Maintenance of wildlife;
4. Secondary contact recreation; and
5. Any other reasonable uses.

(f) In all SE3 waters the designated uses are:

1. Secondary contact recreation;
2. Maintenance and migration of fish populations;
3. Migration of diadromous fish;
4. Maintenance of wildlife; and
5. Any other reasonable uses.

(g) In all SC waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

REFERENCE NO. 15

STATE OF NEW JERSEY
NEW JERSEY ADMINISTRATIVE CODE

Title 7. Department of Environmental Protection

Office of the Commissioner
Division of Parks and Forestry
Division of Marine Services
Division of Water Resources
Division of Fish, Game and Wildlife
Division of Waste Management
Division of Environmental Quality
Office of Green Acres and Outdoor Recreation
Delaware and Raritan Canal Commission
Pinelands Commission

Published and Distributed By
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Trenton, New Jersey 08625

TRANSMITTAL No. 1988-5 Supp. 5-16-88

TITLE 7

DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUBTITLE D. DIVISION OF WATER RESOURCES

CHAPTERS INCLUDED

(d) The Department shall issue public notice to all interested parties (including affected municipalities and dischargers) and shall hold public hearing(s) as part of any reclassification proceeding.

(e) A reclassification for more restrictive uses shall be made whenever:

1. It is demonstrated to the satisfaction of the Department that there are existing uses of the specific segment that are not included in the designated uses; or

2. Where a reclassification for less restrictive uses has been granted pursuant to N.J.A.C. 7:9-4.10, the bases for that reclassification no longer exist; or

3. It is demonstrated to the satisfaction of the Department that any uses in Section 101(a)(2) of the Federal Clean Water Act, protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, which are not included in the designated uses listed in this subchapter are attainable.

(f) A reclassification for more restrictive uses may be made when:

1. It is demonstrated to the satisfaction of the Department that the waters should be set aside to represent the natural aquatic environment and its associated biota; or

2. It is demonstrated to the satisfaction of the Department that a more restrictive use is necessary to protect a unique ecological system or threatened/endangered species.

(g) In those cases in which a thermal discharge is involved, the procedures for reclassifying segments for more restrictive uses shall be consistent with section 316 of the Federal Clean Water Act.

7:9-4.12 Designated uses of FW1, PL, FW2, SE1, SE2, SE3, and SC waters

(a) In all FW1 waters the designated uses are:

1. Set aside for posterity to represent the natural aquatic environment and its associated biota;

2. Primary and secondary contact recreation;

3. Maintenance, migration and propagation of the natural and established aquatic biota; and

4. Any other reasonable uses.

(b) In all PL waters the designated uses are:

1. Cranberry bog water supply and other agricultural uses;

2. Maintenance, migration and propagation of the natural and established biota indigenous to this unique ecological system;

3. Public potable water supply after such treatment as required by law or regulations;

4. Primary and secondary contact recreation; and

5. Any other reasonable uses.

(c) In all FW2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Primary and secondary contact recreation;

3. Industrial and agricultural water supply;

4. Public potable water supply after such treatment as required by law or regulation; and

5. Any other reasonable uses.

(d) In all SE1 waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

2. Maintenance, migration and propagation of the natural and established biota;

3. Primary and secondary contact recreation; and

4. Any other reasonable uses.

(e) In all SE2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Migration of diadromous fish;

3. Maintenance of wildlife;

4. Secondary contact recreation; and

5. Any other reasonable uses.

(f) In all SE3 waters the designated uses are:

1. Secondary contact recreation;

2. Maintenance and migration of fish populations;

3. Migration of diadromous fish;

4. Maintenance of wildlife; and

5. Any other reasonable uses.

(g) In all SC waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

2. Primary and secondary contact recreation;

3. Maintenance, migration and propagation of the natural and established biota; and

4. Any other reasonable uses.

7:9-4.13 Designated uses of mainstem Delaware River and Delaware Bay (Summarized From the DRBC "Administrative Manual; Part III: Basin Regulations, Water Quality; Including Amendments Through June 29, 1983")

(a) The designated uses for Zone 1C, 1D, and 1E are:

1. Agricultural, industrial and public water supply after reasonable treatment;

2. Wildlife,

REFERENCE NO. 16

GSC-TR8645

GRAPHICAL EXPOSURE MODELING SYSTEM

(GEMS)

USER'S GUIDE

VOLUME 2. MODELING

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
EXPOSURE EVALUATION DIVISION
Task No. 3-2
Contract No. 68023970
Project Officer: Russell Kinerson
Task Manager: Loren Hall

Prepared by:

GENERAL SCIENCES CORPORATION
8401 Corporate Drive
Landover, Maryland 20785

Submitted: December 1, 1986

GEMS> I

UNITED STATES PRINTING INK
LATITUDE 40:49:13 LONGITUDE 74: 5:33 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	409	8695	42674	69613	137615	259006
RING TOTALS	0	409	8695	42674	69613	137615	259006

GEMS> I

UNITED STATES PRINTING INK
LATITUDE 40:49:13 LONGITUDE 74: 5:33 1980 HOUSING

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	146	3287	15996	26440	51003	96872
RING TOTALS	0	146	3287	15996	26440	51003	96872

	POPULATION	HOUSING
1/4	0	0
1/2	409	146
1	9,104	3,433
2	51,778	19,429
3	121,391	45,869
4	259,006	96872

REFERENCE NO. 17

The Complete Handbook of Hazardous Waste Regulation

A Comprehensive, Step-by-Step Guide to the Regulation of Hazardous Wastes Under RCRA, TSCA, and Superfund

Travis Wagner

PERRY-WAGNER PUBLISHING CO., INC.

A Leader in the Environmental Information Field

Brunswick, Maine Washington, D.C.

EPA waste number	Hazardous waste	Hazard code[1]
K035	Wastewater treatment sludges generated in the production of creosote	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)
K037	Wastewater treatment sludges from the production of disulfoton	(T)
K038	Wastewater from the washing and stripping of phorate production	(T)
K039	Filter cake from the distillation of diethylphosphorodithioic acid in the production of phorate	(T)
K040	Wastewater treatment sludge from the production of phorate	(T)
K041	Wastewater treatment sludge from the production of toxaphene	(T)
K098	Untreated process wastewater from the production of toxaphene	(T)
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T	(T)
K043	2,6-Dichlorophenol waste from the production of 2,4-D	(T)
K099	Untreated wastewater from the production of 2,4-D	(T)

Explosives

K044	Wastewater treatment sludges from the manufacturing and processing of explosives	(R)
K045	Spent carbon from the treatment of wastewater containing explosives	(R)
K046	Wastewater treatment sludges from the manufacturing, formulation, and loading of lead-based initiating compounds	(R)
K047	Pink/red water from TNT operations	(R)

Petroleum Refining

K048	Dissolved air floatation (DAF) float from the petroleum refining industry	(T)
K049	Slop oil emulsion solids from the petroleum refining industry	(T)

EPA waste number	Hazardous waste	Hazard code[1]
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)
K051	API separator sludge from the petroleum refining industry	(T)
K052	Tank bottoms (leaded) from the petroleum refining industry	(T)

Iron and Steel

K061	Emission control dust/sludge from the primary production of steel in electric furnaces	(T)
K062	Spent pickle liquor generated by steel finishing operations of facilities within iron and steel industry SIC codes 331 and 332.	(C,T)

Secondary Lead

K069	Emission control dust/sludge from secondary lead smelting	(T)
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting	(T)

Veterinary Pharmaceuticals

K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)

Ink Formulation

K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment	(T)

EPA waste number	Hazardous waste	Hazard code[1]
	used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead	
	Coking	
K060	Ammonia still lime sludge from coking operations	(T)
K087	Decanter tank tar sludge from coking operations	(T)

Commercial Chemical Products

The following P code wastes are considered acutely hazardous.

P023 Acetaldehyde, chloro-
P002 Acetamide, N-(aminothioxomethyl)-
P057 Acetamide, 2-fluoro-
P058 Acetic acid, fluoro-, sodium salt
P066 Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester
P001 3-(alpha-acetonylbenzyl)-4-hydroxycoumarin and salts, when present at concentrations greater than 0.3%
P002 1-Acetyl-2 thiourea
P003 Acrolein
P070 Aldicarb
P004 Aldrin
P005 Allyl alcohol
P006 Aluminum phosphide
P007 5-(Aminomethyl)-3-isoxazolol
P008 4-aAminopyridine
P009 Ammonium picrate (R)
P119 Ammonium vanadate
P010 Arsenic acid
P012 Arsenic(III) oxide
P011 Arsenic (V) oxide
P011 Arsenic pentoxide
P012 Arsenic trioxide
P038 Arsine, diethyl
P054 Aziridine

P013 Barium cyanide
P024 Benzenamine, 4-chloro-
P077 Benzenamine, 4-nitro-
P028 Benzene, (chloromethyl)-
P042 1,2-Benzenediol, 4-[(1-hydroxy-2-(methyl-amino)ethyl)]-
P014 Benzenethiol
P028 Benzyl chloride
P015 Beryllium dust
P016 Bis(chloromethyl) ether
P017 Bromoacetone
P018 Brucine

P021 Calcium cyanide
P123 Camphene, octachloro-
P103 Carbamimidoselenoic acid
P022 Carbon bisulfide
P022 Carbon disulfide

REFERENCE NO. 18

R-584-10-87-02

FINAL
EXPANDED SITE INSPECTION REPORT
INDUSTRIAL LATEX SITE
WALLINGTON, NEW JERSEY

PREPARED UNDER
TECHNICAL DIRECTIVE DOCUMENT NO. 02-8703-76
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

JANUARY 21, 1988

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

Vance M Matthews

VANCE M. MATTHEWS
PROJECT MANAGER

REVIEWED/APPROVED BY:

Ronald M. Naman

RONALD M. NAMAN
FIT OFFICE MANAGER

2.2.4 Geology

Regional Setting

Figure 2-8 depicts the physiographic provinces of New Jersey. Figure 2-9 presents a geologic cross-section of New Jersey. The Industrial Latex property lies within the Triassic Lowlands subdivision of the Piedmont Province. The area is underlain by the Triassic-age Brunswick Formation of the Newark group. Regionally, the Triassic Lowlands are characterized by an underlying bedrock of northwestward-sloping sedimentary deposits, occasionally interrupted by basaltic lava flows and diabase intrusions. The sedimentary bedrock deposits of shale, siltstone, and sandstone are expressed at the surface by gently rolling lowlands. The basalts and diabase form highly resistant ridges, known as the Watchung Mountains. The Industrial Latex Site is approximately 4.5 miles southeast of the First Watchung Mountain.

The Industrial Latex Site and surrounding areas have been affected by the most recent glaciation. The terminal moraine of the Wisconsin Stage glaciation is approximately 14 miles southwest of the site. The effect of glaciation was to scrape elevated areas, exposing bedrock on ridges, and to deposit till in low-lying areas. Elsewhere, the upper surface of the Brunswick is usually weathered to a clayey regolith. However, in this area the glaciation removed almost all of the regolith and soils before till was deposited. Some of the glacial materials along valleys have since been reworked and stratified by surface waters. Till deposited at higher elevations is generally not sorted and consists of mixed clays, sands, and gravels.

Site Geology

The Industrial Latex property is situated on the western slope of a northeast-southwest trending ridge. Bedrock was encountered at approximately 40 ft below ground surface during the installation of on-site monitoring wells. Further down in the valley 0.50 mile west of Industrial Latex, stratified drift is 118 feet thick over bedrock (NJDEP well permit records). At least 12 feet of saturated clay was noted in the easternmost portion of the site between Building No. 1 and the Conrail/New Jersey Transit railroad tracks. Along the access road at the western side of the site, silt and clay was noted to a depth of 7 feet and clay to 12 feet (USGS, 1986).

2.2.5 Hydrogeology

The Brunswick Shale Aquifer is the primary source of groundwater in the area. The formation is up to 6000 feet thick, with the upper 300-500 feet most often utilized for water supply. This is due to the fact that groundwater flow in the Brunswick Shale is mostly dependent on fracturing in the rock, and only to a small degree on the bedding characteristics. Generally, the shale is more fractured toward the top of the formation. Fracturing is less frequent and less developed with depth (Herpers and Barksdale, 1951). However, there may be large variations both horizontally and vertically, and assumptions cannot be made on the nature of the fracture systems without site-specific studies. Within the Brunswick Shale, wells may be located near each other and still be hydraulically unconnected. Conversely, more-distant wells may be hydraulically connected.

The Brunswick Formation dips 10-20 degrees toward the northwest. However, the major fracture systems in this formation run nearly vertical from northeast to southwest. As a result, groundwater contours in the shale typically appear elongated, with the long axis running northeast to southwest. This type of groundwater flow is difficult to characterize using formulae which have been developed assuming uniform conditions and isotropic flow. For this reason, site-specific work was necessary for an accurate assessment of groundwater flow. Factors which may influence flow locally in the bedrock include:

- Degree of fracturing in bedrock
- Hydraulic connections between fractures and/or fracture zones
- Weathering or filling of fractures
- Pumping wells in the area
- Groundwater recharge to the aquifer

Monitoring wells installed at the Curtiss-Wright facility, approximately 0.50 mile north of the site, show groundwater in bedrock to be flowing generally westward. Groundwater in the overburden (stratified drift) appeared to be flowing in a west to northwesterly direction (USGS, 1986).

The depth to water at Industrial Latex is greater than 14 feet below the ground surface at the southern end of the property where buried tanks were excavated (USGS, 1986). Near the railroad tracks, saturated clay indicates a possible perched condition.

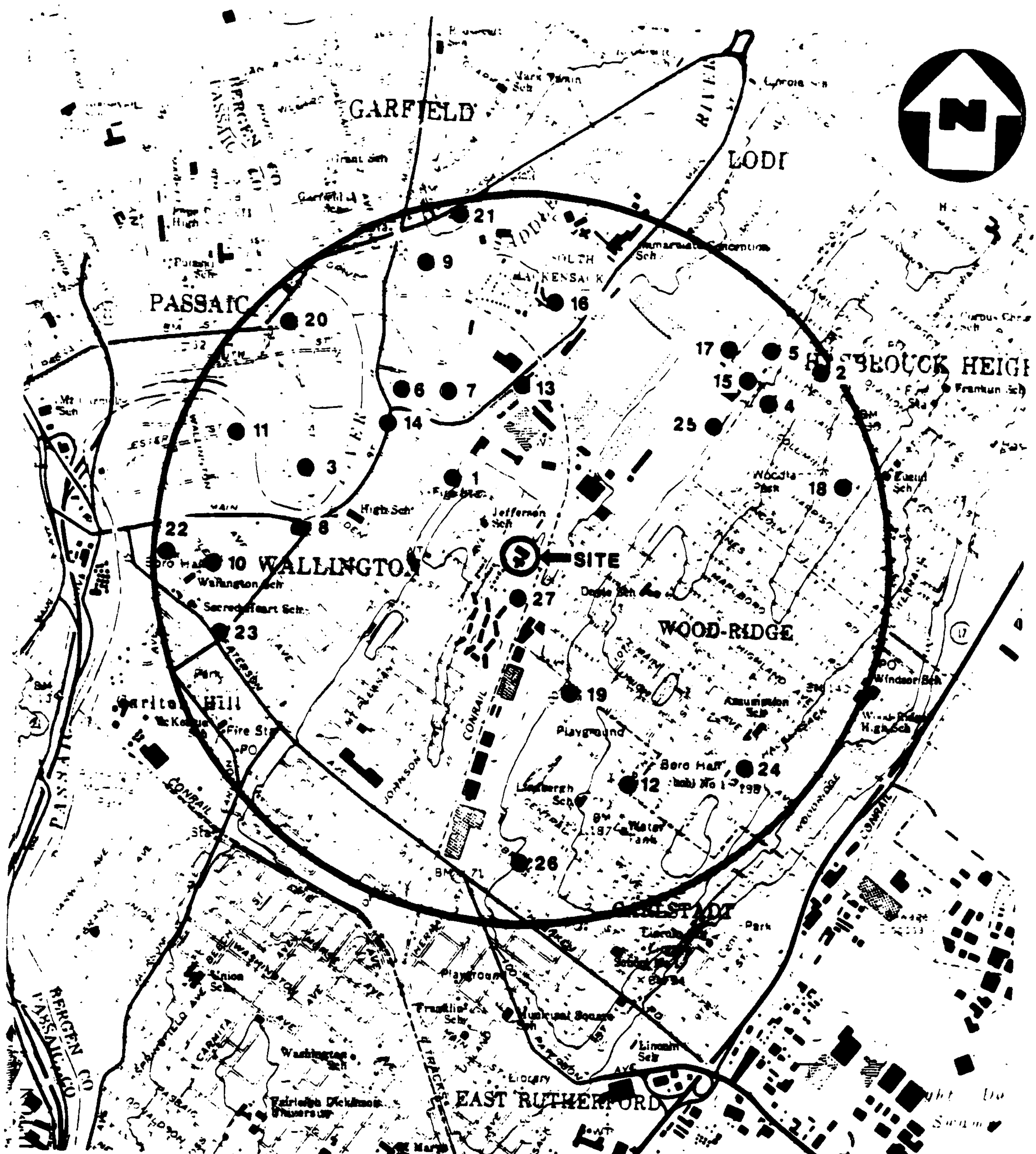
Locally, industrial or public supply wells are drilled to depths of up to 300 or 400 feet, and are cased only into the top of bedrock. These open bedrock wells provide an interconnection between fracture zones, and act as a potential conduit for contaminant migration. In addition, these wells can disrupt local groundwater flow patterns by connecting water-bearing zones with different hydraulic heads. The hydraulic heads observed in these deep wells are a composite (Carswell and Rooney, 1976). The change in hydraulic head may encourage groundwater flow from zones of higher hydraulic head to zones of lower hydraulic head.

A caliper log of the Wallington Borough public supply well on Spring Street, just southeast of Industrial Latex, indicates major fracture zones at 36-40 feet deep and 53-66 feet deep. Smaller fractures were noted down the rest of the 392-foot-deep well (USGS, 1986).

Other local factors may affect groundwater flow and contaminant migration. Poorly sealed storm drains located along the eastern side of the railroad tracks may allow groundwater to move into the drainage system, or may leak stormwater into the groundwater. An historic stream, located east of the Industrial Latex Site along the present railroad right-of-way (refer to Figure 2-6), originally channeled drainage from the area into Saddle River. The stream passed through what is now the Curtiss-Wright facility. The more permeable stream deposits may provide an alternative route for shallow groundwater movement. Available information is not sufficient to determine effects of this stream upon groundwater flow.

Groundwater Use

Existing well records were compiled from NJDEP files. These records indicate that groundwater is a major source of domestic and industrial water within 3 miles of the site. The vast majority of the well logs indicate that the Brunswick Formation is the aquifer most often tapped for potable water supply. Further study will show which of these wells, particularly those listed for domestic or food-industry supply, are still in use. Public supply wells for the Borough of Wallington are located just southeast of the Industrial Latex property. Other public supply wells are northwest and west of the site, many of which are within 1 mile. All of these public supply wells have been closed due to groundwater contamination,



NOTE: SEE TABLE 4-7 FOR REFERENCED WELL DATA

GROUNDWATER WELLS WITHIN
1-MILE RADIUS OF INDUSTRIAL LATEX
INDUSTRIAL LATEX, WALLINGTON, N.J.

SCALE: 1"= 2000'

FIGURE 4-10

NUS CORPORATION

TABLE 4-7

GROUNDWATER WELLS WITHIN 1-MILE RADIUS OF INDUSTRIAL LATEX

Map Well No.	Address	Owner	Well Depth (ft)	Formation	Use	Comments
1	31 Kossuth St Wallington, NJ	Mr. Kowalowitz	118	Brunswick	Domestic	Unable to contact
2	116 Prospect St Garfield, NJ (a)	Frank Felber	100	Brunswick	Domestic	
3	122 Prospect St Garfield, NJ (a)	Rose Tuminia	95	Brunswick	Domestic	
4	232 Springfield Ave Hasbrouck Heights, NJ	Mr. Amato	160	Brunswick	Domestic	Used for lawn watering only
5	138 Woodside Ave Hasbrouck Heights, NJ	Robert Daub	162	Brunswick	Domestic	
6	Main St/Midland Ave Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
7	Dull Field Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
8	Main Ave Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
9	Hobard St Garfield, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
10	Maple St/Union Blvd. Wallington, NJ	Boro of Wallington	300	Brunswick	Municipal	Used for testing only
11	Lester St Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
12	Jefferson Ave Carlstadt, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination

TABLE 4-7 (CONT'D)

GROUNDWATER WELLS WITHIN 1-MILE RADIUS OF INDUSTRIAL LATEX

Map Well No.	Address	Owner	Well Depth (ft)	Formation	Use	Comments
18	Lot 4, Block 27 Hasbrouck Heights, NJ	Exxon	16	sand	Commercial	Observation
			15	sand	Commercial	Observation
			15	sand	Commercial	Observation
			15	sand	Commercial	Observation
			14	sand	Commercial	Observation
19	443 Garden St Carlstadt, NJ	A & M Electroplating Corp.	375	Brunswick	Industrial	
20	8th St Passaic, NJ	J.L. Prescott & Co.	500	Brunswick	Commercial	Used for air conditioning
21	113 Farnham Ave	Yoo-Hoo Beverage Co.	303	Brunswick	Industrial	
22	Main St/Paterson Ave Wallington, NJ	Amoco Oil Co.	16	sand	Industrial	Observation
			15	sand	Industrial	Observation
		15	sand	Industrial	Observation	
		15	sand	Industrial	Observation	
		15	sand	Industrial	Observation	
		15	sand	Industrial	Observation	
		15	sand	Industrial	Observation	

TABLE 4-7 (CONT'D)

GROUNDWATER WELLS WITHIN 1-MILE RADIUS OF INDUSTRIAL LATEX

Map Well No.	Address	Owner	Well Depth (ft)	Formation	Use	Comments
23	455 Paterson Ave Wallington, NJ	King Car Wash	200	Brunswick	Commercial	Used for washing cars
24	277 Hackensack St	Econo-o-Wash	302	Brunswick	Commercial	Owner was unaware of a well
25	Woodridge, NJ	Wright & Aeronautical Equip. Co.	447	Brunswick	Industrial	Used in processing
			445	Brunswick	Industrial	Used in processing
			430	Brunswick	Industrial	Used in processing
			403	Brunswick	Industrial	Used in processing
			340	Brunswick	Industrial	
			337	Brunswick	Industrial	
			312	Brunswick	Industrial	
26	Broad St/Union St Carlstadt, NJ	Record Electrical Plating Co.	200	Brunswick	Industrial	
27	Spring St Wallington, NJ	Boro of Wallington	392	Brunswick	Municipal	Not in use

Note to Table 4-7:

(a) Address indicated is the address of owner of the well. All wells are located within a 1-mile radius of the site as shown in Figure 4-10.

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EXPANDED SITE INSPECTION REPORT
INDUSTRIAL LATEX SITE
WALLINGTON, NEW JERSEY
VOLUME 2

APPENDIX A

APPENDIX A-3

N.J. DEPARTMENT OF HEALTH SAMPLING RESULTS FOR THE BOROUGH OF WALLINGTON MUNICIPAL WATER SUPPLY WELLS

APPENDIX A-3

NEW JERSEY STATE DEPARTMENT OF HEALTH SAMPLING RESULTS FOR THE BOROUGH OF WALLINGTON MUNICIPAL WATER SUPPLY WELLS, YEAR 1985.

VOLATILES						
SAMPLE NUMBER	WELL No.8	WELL No.5	DULL WELL	LESTER WELL	WELL AT 24 UNION BLVD.	WELL No.5 AT HATHAWAY
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MATRIX	water	water	water	water	water	water
DATE	4/5/85	4/5/85	4/5/85	4/5/85	7/29/85	7/29/85
Bromoform	NA	NA	NA	NA	4.1	
chloroform	31				NA	NA
tetrachloroethene			37	14	17	
trichloroethene			33		29	89
1,1,1-trichloroethane			10			2.1
1,1-dichloroethane	2	12				12
1,1-dichloroethene		3				4.7
1,2-dichloroethane	NA	NA	NA	NA		4.7
1,2-dichloroethene					30	1148
1,2-dichloropropane		2	23		NA	NA

NOTE:

NA - NOT ANALYZED FOR

APPENDIX A-4
ANALYTICAL RESULTS FOR OVERBURDEN WELL (OW) SAMPLES
COLLECTED AT THE CURTISS-WRIGHT CORPORATION
WOOD-RIDGE, NEW JERSEY

VOLATILES								
SAMPLE NUMBER	OW-1	OW-2	OW-3	OW-4	OW-5(a)	OW-6(b)	OW-7	OW-8
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Chloromethane								
Bromomethane								
Vinyl Chloride								
Chloroethane								
Methylene Chloride			372					
Acetone								
Carbon Disulfide								
1,1-Dichloroethene						634		
1,1-Dichloroethane						203		
Trans-1,2-Dichloroethene	13		20200			10900		
Chloroform	13							
1,2-Dichloroethane								
2-Butanone								
1,1,1-Trichloroethane						674		
Carbon Tetrachloride								
Vinyl Acetate								
Bromodichloromethane								
1,1,2,2-Tetrachloroethane								
1,2-Dichloropropane								
Trans-1,3-Dichloropropene								
Trichloroethene			22300			1910		26
Dibromochloromethane								
1,1,2-Trichloroethane								
Benzene	106			5290	1220	638		
Cis-1,3-Dichloropropene								
2-Chloroethylvinylether								
Bromoform								
2-Hexanone								
4-Methyl-2-Pentanone								
Tetrachloroethene			828			1270		
Toluene				3810	934	1240		
Chlorobenzene								
Ethylbenzene				1280		207		
Styrene								
Total Xylenes								

NOTES:

(a) Groundwater samples collected from well OW-5 contained Naphthalene (208 ug/l) and Phenanthrene (87 ug/l).

(b) Groundwater samples collected from well OW-6 contained Naphthalene (61 ug/l) and 1,2-Dichlorobenzene (73 ug/l).

APPENDIX A-5

STRATIGRAPHIC LOGS AND WELL CONSTRUCTION DIAGRAMS COMPLETED AS PART OF THE HYDROGEOLOGICAL INVESTIGATION AT THE INDUSTRIAL LATEX SITE

NUS CORPORATION

TDD NO.: 02-8703-16

PROJECT: Industrial Latex

BOREHOLE NO.: B-3

BOREHOLE LOG

BOREHOLE LOCATION: +100 ft. North, 70 ft. West of Bldg #1, NW corner

CONTRACTOR: W.C. Services

DRILLER: Mike Kavlunas

GROUND SURFACE ELEV.(FROM MSL) +54.99 (FT)

COMPLETION DEPTH: 12.0 ft.

DATE STARTED 6-11-87 COMPLETED: 6-11-87

LOGGED BY: G. Pollack CHECKED BY: PVS

TYPE OF RIG: TRUCK ☑ TRAILER MOUNTED ☐ TRIPOD ☐ OTHER ☐ ______ MANUFACTURER CME750

CASING DIA. ______ INCHES FROM ______ TO ______ FEET

DRILLING METHOD: Hollow Stem Auger BIT TYPE ______ BIT DIA. 4 in. OD

SAMPLING EQUIP. (TYPE & SIZE) SPLIT SPOON 24 in. length DIA. 2 in. OD

TUBE ______ DIA. ______

CORE ______ DIA. ______

SAMPLER HAMMER WEIGHT (LBS) 140 AVERAGE FALL (INCHES) 30

CASING HAMMER WEIGHT (LBS) ______ AVERAGE FALL (INCHES) ______

GROUNDWATER	DEPTH	DATE	TIME
FIRST ENCOUNTERED	10.0 ft.	6-11-87	

DEPTH (FT)	SAMPLE TYPE & NO.	SAMPLE DEPTH (FT)	BLOWS/6"	REC. (FT)	RQD %	SAMPLE DESCRIPTION	STRATA	REMARKS
	SS-1	0-2	10	1.4		Med. dense brown f-m sand, some silt, trace gravel with roots.	SM (Fill)	SS-1 (surface) sent to lab as NJ07B-3S-1 for HSL analysis. Sample Moist.
1			10					
			6					
2			4					
	SS-2	2-4	6	1.0		Med.dense brown silty f-m sand, trace gravel.	(Fill)	
3			5					
			15					
4			15					
	SS-3	4-6	6	1.7		Med. dense brown silty f-m sand, trace gravel.		
5			7					
			7				SM	
6			8					
	SS-4	6-8	8	0.3		Med. dense brown silty sand, trace clay.		Sample moist. SS-4 sent to lab as NJ07B-3S-2 for VOA only. Composite of 0-7 ft. sent to lab for remainder of HSL analysis.
7			8					
			8					
8			11					
	SS-5	8-10	6	0.8		Med. dense f-m sand, some silt, trace gravel, grading to sandy silt, some clay, some gravel.	ML	
9			6					
			7					
10			6				▼	Water table 10.0 ft.

SIGNATURE: ______ DATE: ______

ID#	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER	COMMENT	X	Y	DIST
26 6126	Lot 4, Block 27, Hasbrouck Hgts., NJ	26-03-826	15	3	3" X 15'	PVC	OBS	Exxon	sand	good					ERR	Diamond Drilli		0.97	0.5114	1.096
26 6127	Lot 4, Block 27, Hasbrouck Hgts., NJ	26-03-826	15	3	3" X 15''	PVC	OBS	Exxon	sand	good					ERR	Diamond Drilli		0.97	0.5114	1.096
26 3525	116 Prospect St., Garfield, NJ	26-03-827	100	6	unknown		DOM	Kazimierz Komsa	BrunSH	poor		10		0	ERR	John Lauritsen		0.582	0.2557	0.635
26 5727	Passaic St., Hasbrouck Hgts., NJ	26-03-829	202	6	unknown		DOM	William Postman		no		22	2	23	0.96	E.S. Richardso		0.97	0.2557	1.003
26 4329	220 Boulevard., Hasbrouck Hgts., NJ	26-03-832	180	6	none		DOM	Nimmo & Co.		no		25	2	31	0.81	E.S. Richardso		1.358	0.7671	1.559
26 680	462 Broadway, Paterson, NJ	26-03-835	150	6	unknown		IND	Geerinch Const. Co.		no		10	4		ERR	J. Foster		1.358	0.5114	1.451
26 1071	488 Terrace Ave., Hasbrouck Hgts., NJ	26-03-836	90	6	none		DOM	Paul Spinelle	BrunSH	poor		10	1	31	0.32	E.S. Richardso		1.552	0.5114	1.634
26 5123	186 Berkshire Rd., Hasbrouck Hgts., NJ	26-03-836	198	6	unknown		DOM	William Imken		no		25	2	26	0.96	E.S. Richardso		1.552	0.5114	1.634
26 4705	552 Terrace Ave., Hasbrouck Hgts., NJ	26-03-839	203	6	unknown		IND	Elio M. Maroni		no		20	2	60	0.33	E.S. Richardso		1.552	0.2557	1.572
26 4725	Airport Rd., Teterboro, NJ	26-03-839	480	8	unknown			Combinates Corp.		no		110	2	200	0.55	E.S. Richardso		1.552	0.2557	1.572
26 2172	Route 17, Hasbrouck Hgts., NJ	26-03-842	288	6	unknown		IND	Esso Standard Oil Co.	BrunSH	poor					ERR	Rinbrand Well		0	-0.511	0.511
26 4277	611-641 Broad St., Carlstadt, NJ	26-03-848	430	6	none		COOL	Gene's Chemical Works, INC	BrunSH	poor		50	3	170	0.29	E.S. Richardso		0.194	-0.511	0.546
26 5156	277 Hackensack St., Wood Ridge, NJ	26-03-858	302	6	unknown		Laundry	Econ-o-Wash		no		65	3	90	0.72	E.S. Richardso		0.776	-0.511	0.929
26 547	Hackensack Ave., Wood Ridge, NJ	26-03-859	145	6	unknown		IND	Terminal Const. Co.		no		120	4	60	2.00	John O. Grayno		0.97	-0.511	1.096
26 4722	Airport Rd., Teterboro, NJ	26-03-863	480	8	none		COOL	Combinates Corp.		no		100	2	194	0.52	E.S. Richardso		1.552	0	1.552
26 5412	211 Route 17, Hasbrouck Hgts., NJ	26-03-864	167	6	unknown		Diner	Cosmos Diner, INC	BrunSH	poor		40	3	62	0.65	E.S. Richardso		1.164	-0.255	1.191
26 853	Washington Ave., Carlstadt, NJ	26-03-867	255	8	unknown		IND	Carlton-Cooke Corp.	BrunSH	poor		150	8	135	1.11	Peerless Well		1.164	-0.511	1.271
26 458	512 Springfield Ave., Hasbrouck Hgts., NJ	26-03-867	61	6	none		DOM	Thomas Basse	BrunSH	poor		30	1	20	1.50	E.S. Richardso		1.164	-0.511	1.271
26 1041	Route #17, Wood Ridge, NJ	26-03-867	103	6	unknown		DOM	August Ferretti	BrunSH	poor		15	1	14	1.07	E.S. Richardso		1.164	-0.511	1.271
26 4914	Union Ave. & Delois St., E. Rutherford, NJ	26-03-867	305	8	none		COOL	DuBois Chemicals	BrunSH	poor		?	?	?	ERR	Rinbrand Well		1.164	-0.511	1.271
26 4698	443 Garden St., Carlstadt, NJ	26-03-871	375	8	unknown		IND	A & M Electro Plating Corp.	BrunSH	poor		110	?	200	0.55	E.S. Richardso		0	-0.767	0.767
26 926	226 Paterson Ave., E. Rutherford, NJ	26-03-875	153	6	unknown		COOL	Mr. John Huettemen	BrunSH	poor		30	3	20	1.50	Rinbrand Well		0.194	-1.022	1.041
26 7752	Paterson Plank Rd., Carlstadt, NJ	26-03-878	17	8	4" X 10'	PVC	OBS	Cosan Chemical Corp.		no					ERR	Empire Soils I		0.194	-1.278	1.293
26 7753	Paterson Plank Rd., Carlstadt, NJ	26-03-878	14	8	4" X 10'	PVC	OBS	Cosan Chemical Corp.		no					ERR	Empire Soils I		0.194	-1.278	1.293
26 7754	Paterson Plank Rd., Carlstadt, NJ	26 03-878	20	8	4" X 10'	PVC	OBS	Cosan Chemical Corp.		no					ERR	Empire Soils I		0.194	-1.278	1.293
26 7482	Paterson Plank Rd., Carlstadt, NJ	26-03-878	4	4	4" X 2'	PVC	OBS	Cosan Chemical Corp.	soil	poor					ERR	Empire Soils I		0.194	-1.278	1.293
26 7481	Paterson Plank Rd., Carlstadt, NJ	26-03-878	4	4	4" X 2'	PVC	OBS	Cosan Chemical Corp.	soil	poor					ERR	Empire Soils I		0.194	-1.278	1.293
26 7480	Paterson Plank Rd., Carlstadt, NJ	26-03-878	4	4	4" X 2.5'	PVC	OBS	Cosan Chemical Corp.	soil	poor					ERR	Empire Soils I		0.194	-1.278	1.293
26 7479	Paterson Plank Rd., Carlstadt, NJ	26-03-878	3.7	4	4" X 2.2'	PVC	OBS	Cosan Chemical Corp.	soil	poor					ERR	Empire Soils I		0.194	-1.278	1.293
26 7478	Paterson Plank Rd., Carlstadt, NJ	26-03-878	2.3	4	4" X 1.3'	PVC	OBS	Cosan Chemical Corp.	soil	poor					ERR	Empire Soils I		0.194	-1.278	1.293
26 4682	Ethel Blvd., Wood Ridge, NJ	26-03-882	24.5	4	4" X 10'	PVC	Test	Rovic Const. Co.	sand	poor					ERR	Rinbrand Well		0.776	-0.767	1.091
26 4683	Ethel Blvd., Wood Ridge, NJ	26-03-882	19	4	4" X 10'	PVC	Test	Rovic Const. Co.	sand	poor					ERR	Rinbrand Well		0.776	-0.767	1.091
26 4684	Ethel Blvd., Wood Ridge, NJ	26-03-882	18.5	4	4" X 10'	PVC	Test	Rovic Const. Co.	marl	poor					ERR	Rinbrand Well		0.776	-0.767	1.091
26-2992	Route #17, Carlstadt, NJ	26-03-885	205	6	unknown		IND	Bergen Iron & Engineering Co.	BrunSH	poor		13		17	0.76	Frank Bott, IN		0.776	-1.022	1.283
26 2936	590 Commercial Ave., Carlstadt, NJ	26-03-886	153	6	unknown		COOL	Benedict Packing Corp.	BrunSH	poor		50	?	65	0.77	Rinbrand Well		0.97	-1.022	1.409
26 4141	590 Commercial Ave., Carlstadt, NJ	26-03-886	350	6	none		IND	Benedict Packing Corp.	BrunSH	poor		175	8	150	1.17	Rinbrand Well		0.97	-1.022	1.409
26 1384	Route #17, Carlstadt, NJ	26-03-886	250	6	unknown		A/C	Buff's Diner	BrunSH	poor		45	3	72	0.63	E.S. Richardso		0.97	-1.022	1.409
26 1033	Carlstadt Test Well #2, Carlstadt, NJ	26-03-888	263	6	unknown			Hackensack Water Co.	BrunSH	good					ERR	Artesian Well		0.776	-1.278	1.495
26 2828	Broad & 13th Sts., Carlstadt, NJ	26-03-888	400	8	none		IND	Lancaster Chemical Co.	BrunSH	poor		55	8	128	0.43	Burrows Well D		0.776	-1.278	1.495
26 1075	Carlstadt Test Well #3, Carlstadt, NJ	26-03-888	86	8	none			Hackensack Water Co.	gravel	good		300	8	30	10.00	Artesian Well		0.776	-1.278	1.495
26 3021	Broad & Union Sts., Carlstadt, NJ	26-03-888	200	6	unknown		IND	Record Electrical Plating Co.	BrunSH	poor		90	8	70	1.29	Rinbrand Well		0.776	-1.278	1.495
26 1158	Moonachie Test Well #1, Moonachie, NJ	26-03-894	243	6	6" X 10'	Everdur		Hackensack Water Co.	BrunSH	good		60		177	0.34	Artesian Well		1.164	-1.022	1.549
26 487	Moonachie, N.J.	26-03-895	160	6	unknown		IND	Frank A. Rity	BrunSH	poor		20	0.5	30	0.67	Peerless Well		1.358	-1.022	1.700
26 368	Little Ferry Brons & Allum Foundry, Moonac	26-03-895	160	6	unknown		IND	Felix Cascello	BrunSH	poor		5	0.5	20	0.25	Arthur Wilhelm		1.358	-1.022	1.700
26 4900	Grand & Starly Rd., Carlstadt, NJ	26-03-895	300	8	none		COOL	Manhattan Products Co.	BrunSH	poor		65	6	114	0.57	Rinbrand Well		1.358	-1.022	1.700
26 4987	670 Dell Rd., Carlstadt, NJ	26-03-895	300	8	none		COOL	Thumann, INC	BrunSH	poor		250	6	178	1.40	Rinbrand Well		1.358	-1.022	1.700
26 376	Monnachie, NJ	26-03-896	160	6	unknown		IND	Atlantic Pipe Bending & Fabr. Co	BrunSH	poor		5	0.5	35	0.14	Arthur Wilhelm		1.552	-1.022	1.858
26 4979	55 Anderson Ave., Moonachie, NJ	26-03 897	202	6	unknown		COOL	Carter Manufacturing Co.	BrunSH	poor		45	3	178	0.25	E.S. Richardso		1.164	-1.278	1.729
26 3791	150 W. Commercial Ave., Moonachie, NJ	26-03-899	200	8	unknown		IND	World Plastic Extruders, INC	BrunSH	poor		100	8	25	4.00	Algeier Bros.		1.532	-1.278	1.700

IDN	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMP	DRAW	S'CAP	DRILLERCOMMENTX		Y	DIST
26 4616	73 McArthur Dr., Clifton, NJ	26-02-6??	185	6	unknown		DOM	Eugene Hartzberg	BrunSH	OK		65	4	70	0.93	Engineering Dr	-3.492	1.0228	3.630
26-4342	165 Gould Street, Paterson, NJ	26-02-61?	250	8	unknown		COOL	Scientific Electro Corp.		no		55	8	165	0.33	W.H. Beatty	-3.492	2.5570	4.328
26-2916	Hazel Ave., Clifton, NJ	26-02-614	132	6	unknown		AC	Mountainside Inn	BrunSH	poor		36	1	8	4.50	Burrows Well D	-3.492	2.0127	4.483
26-1096	30 Pearlbrook Dr., Clifton, NJ	26-02-615	95	6	unknown		DOM	Frank Obert		no		15				Foster	-3.298	2.0127	4.334
26-399	Goulds Ave., Paterson, NJ	26-02-616	505	8	unknown		IND	Farmland Dairy	BrunSH	no		255	8	85	3.00	Rinbrand Well	-3.104	2.0127	4.188
26-2922	Hazel Avenue, Clifton, NJ	26-02-617	133	6	unknown		AC	Mountainside Inn	BrunSH	poor						Burrows Well D	-3.492	2.5570	4.328
26 887	Circle Ave., Clifton, NJ	26-02-618	400	10	unknown		COOL	PSE&G	BrunSH	poor		164	8	145	1.13	Rinbrand Well	-3.298	2.5570	4.173
26-7321	Paterson, NJ	26-02-618	12.1	3	10	PVC	OBS	EXXON	BrunSH	yes						Diamond Drilli	-3.298	2.5570	4.173
26-7322	Paterson, NJ	26-02-618	7	3	10	PVC	OBS	EXXON	BrunSH	yes						Diamond Drilli	-3.298	2.5570	4.173
26-7323	Paterson, NJ	26-02-618	13	3	10	PVC	OBS	EXXON	BrunSH	yes						Diamond Drilli	-3.298	2.5570	4.173
26-7324	Paterson, NJ	26-02-618	11.8	3	10	PVC	OBS	EXXON	BrunSH	yes						Diamond Drilli	-3.298	2.5570	4.173
26-4826	Wabash and Illinois, Paterson, NJ	26-02-622	200	6	none			Crown Roll Leaf INC	BrunSH	poor		80	4	100	0.80	Rinbrand Well	-2.716	3.0684	4.097
26-112	NE Corner Iowa&Penna, Paterson, NJ	26-02-623	447	10	unknown			Bogue Elec. Co.				75	1	65	1.15	Henry A. Kieff	-2.522	3.0684	3.971
26-5239	165 Gould Ave., Paterson, NJ	26-02-624	200	8	none		Refus	Augsburger Tool & Die Co.	BrunSH	yes		100	1.5	8	12.50	W. Bellore Well	-2.91	2.8127	4.047
26-5240	165 Gould Ave., Paterson, NJ	26-02-624	200	8	none		COOL	Augsburger Tool & Die Co.	BrunSH	yes		100	2	12	8.33	W. Bellore Well	-2.91	2.8127	4.047
26-3345	264 Wabash Ave., Paterson, NJ	26-02-624	140	6	unknown		IND	Peter Garofano & Son, INC	BrunSH	poor		201	3		ERR	Burrows Well D	-2.91	2.8127	4.047
26-4244	87-89 Illinois Ave, Paterson, NJ	26-02-625	125	6	unknown		DOM	N & N Lumber Co.	BrunSH	OK		30				Joe C. Hautach	-2.716	2.8127	3.909
26-5127	West Hazel Road, Clifton, NJ	26-02-626	215	8	none		COOL	A.G.L. Welding Supply Co.		no		65	6	80	0.81	Rinbrand Well	-2.522	2.8127	3.777
26-2057	177 Genesee Ave, Paterson, NJ	26-02-627	280	8	unknown		COOL	Manhattan Casting Co.	BrunSH	poor		150	8	75	2.00	Rinbrand Well	-2.91	2.5570	3.873
26-28??	85 Third St., Clifton, NJ	26-02-627	600	8	none		IND	Fritzche Brothers	BrunSH	poor		210	8	175	1.20	Rinbrand Well	-2.91	2.5570	3.873
26-2116	50 California Ave., Paterson, NJ	26-02-627	280	8	unknown		COOL	Colorite Plastic of N.J. INC	BrunSH	poor		254	8	50	5.08	Rinbrand Well	-2.91	2.5570	3.873
26-4220	73-75 Columbia Ave, Paterson, NJ	26-02-628	105	6	none		IND	Cherry Hill Bus Co.	BrunSH	poor		40			ERR	Joe C. Hautach	-2.716	2.5570	3.730
26-4960	Buffalo Ave., Paterson, NJ	26-02-628	180	6	none		IND	Sea Breeze Products Co.		OK		65	1	17	3.82	W. Bellore Well	-2.716	2.5570	3.730
26-755	107 Alabama Ave., Paterson, NJ	26-02-633	402	8	none			Independence Plating Co.		no		230	8	45	5.11	Henry A. Kieff	-1.94	3.0684	3.630
26-4779	Wabash & Illinois Ave., Paterson, NJ	26-02-634	200	6	none		COOL	Crown Roll Leaf INC	BrunSH	poor		75	4	100	0.75	Rinbrand Well	-2.328	2.8127	3.651
26-831	Rifle Camp Road, W. Paterson, NJ	26-02-645	150	6	none			Helen W. Garlich		no		3	1	142	0.02	Henry A. Kieff	-3.298	2.0456	3.880
26-902	244 Hazel Rd. Clifton, NJ	26-02-645	307	8	unknown		IND	F.E.R. Realty Co. INC	BrunSH	poor		300	8	70	4.29	Burrows Well D	-3.298	2.0456	3.880
26-216	Hazel Rd., Clifton, NJ	26-02-640	202	8	none		DAIRY	Smith's Dairy		no		60	5	13	4.62	Henry A. Kieff	-3.298	1.7899	3.752
26-3545	73 Rollins Ave., Clifton, NJ	26-02-640	144	6	unknown		DOM	N. Giordano	BrunSH	poor		27	2	40	0.68	Harry Ammeraal	-3.298	1.7899	3.752
26-4584	35 Monigan St., Clifton, NJ	26-02-649	200	6	none		COOL	Edmar Creations INC	BrunSH	poor		24	4	96	0.25	Rinbrand Well	-3.104	1.7899	3.583
26-184	241 W. 2nd St., Clifton, NJ	26-02-651	115	6	unknown		Consum	White Seal Brick Co.		no		32	1	6	5.33	Water Wells IN	-2.91	2.3013	3.710
26-4223	151 Crooks Ave, Paterson, NJ	26-02-652	120	6	none		IND	Separate Sanitary Land.	BrunSH	poor		75			ERR	Joe C. Hautach	-2.716	2.3013	3.559
26-3321	Getty Ave., Clifton, NJ	26-02-652	105	6	unknown		IND	Donald Plubey	BrunSH	poor		20	1	61	0.33	Mabey Brothers	-2.716	2.3013	3.559
26-3764	265 Vernon Ave., Paterson, NJ	26-02-656	180	6	unknown			Mr. Salvator De Gorio		no		10			ERR	Allan C. McCon	-2.522	2.0456	3.247
26-4290	5 Wellington St., Clifton, NJ	26-02-656	300	6	unknown		COOL	Alfred Heller Heat	BrunSH	poor		65	4	5	13.00	Algeier Bros.	-2.522	2.0456	3.247
26-7237	150 Paslentson St., Passaic City, NJ	26-02-656	500	6	unknown		POOL	Wirth, Rabbi	BrunSH	poor		30			ERR	William Stotho	-2.522	2.0456	3.247
26-3387	417 Grove St., Clifton, NJ	26-02-657	372	6	unknown		DOM	J. Rilkin	BrunSH	poor		35	1	230	0.15	Mabey Brothers	-2.91	1.7899	3.416
26-3479	47 Maple Ave., Clifton, NJ	26-02-657	150	6	unknown		DOM	George Van Verick	BrunSH	poor		40	4	20	2.00	Rinbrand Well	-2.91	1.7899	3.416
26-5103	521 Highland Ave., Clifton, NJ	26-02-659	165	6	none		DOM	Grusjectle		no		50	2	40	1.25	Slater Bros. W	-2.522	1.7899	3.092
26-3883	64 E. 8th St., Clifton, NJ	26-02-663	65	6	unknown		DOM	Antony Alesai	gravel	poor	?		6	40	ERR	John Lauritsen	-1.94	2.3013	3.009
26 2678	101 Clifton Blvd., Clifton, NJ	26-02-665	173	6	unknown		IND	Allied Distilled Water		no					ERR	D.F. Well Dril	-2.134	2.0456	2.956
26-1343	193 Arlington Ave., Clifton, NJ	26-02-668	300	8	unknown		COOL	Takamine Laboratory	BrunSH	poor			8	110	0.00	Burrows Well D	-2.134	1.7899	2.785
26-3833	Hamilton Ave., Clifton, NJ	26-02-668	300	12	unknown		TEST	Niles Chemical Co.	BrunSH	poor		214	71	125	1.71	Burrows Well D	-2.134	1.7899	2.785
26 4613	193 Arlington Ave., Clifton, NJ	26-02-668	400	12	none		IND	Niles Laboratories INC	BrunSH	poor		180	24	143	1.26	Rinbrand Well	-2.134	1.7899	2.785
26-3819	157 Rutgers Place, Clifton, NJ	26-02-669	120	6	unknown		DOM	Mr. Herman Hansen		no		20	10	100	0.20	John Lauritsen	-1.94	1.7899	2.639
26-3610	119 Holster Rd., Clifton, NJ	26-02-669	150	6	unknown		DOM	Joseph Sons		no		20	6	120	0.17	John Lauritsen	-1.94	1.7899	2.639
26-1065	697 Route 846, Clifton, NJ	26-02-671	300	10	unknown		IND	Shulton INC	BrunSH	poor		435	8	142	3.06	Sam Hickerson	-3.492	1.5342	1.814
26-5035	25 Styertown Rd., Clifton, NJ	26-02-671	285	10	unknown		IND	Yeast Products	BrunSH	poor		400	1	70	5.71	Samuel Stothof	-3.492	1.5342	1.814
26-3782	35 Parkway Ave, Clifton, NJ	26-02-671	125	6	unknown		DOM	James Cannizzo	BrunSH	poor		20	1	42	0.48	Mabey Brothers	-3.492	1.5342	1.814
26 3386	27 Nottingham Terrace, Clifton, NJ	26-02-673	270	6	unknown		DOM	Harry Buras	BrunSH	poor		15	1	92	0.16	Mabey Brothers	3.104	1.5342	1.462
26 9062A	Grove St., Clifton, NJ	26-02-673	200	6	unknown		DOM	Mr. Charles Hares		no		50	6	200	0.25	John Lauritsen	-3.104	1.5342	1.462
26 425	555 McBride Ave., W. Paterson, NJ	26-02-675	60	6	unknown		IND	McBride Auto Body Service		no		5	2	47	0.11	John Lauritsen	3.298	1.2785	1.537
26 2821	Route 846, Clifton, NJ	26-02-675	400	10	none		COOL	Shulton INC	BrunSH	poor		198	8	175	1.13	Rinbrand Well	-3.298	1.2785	1.537

ID#	ADDRESS	LOGDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER	COMMENT	X	Y	DIST
26 1172	Clifton, NJ	26-02-676	389	12	unknown		IND	Athenia Steel Co.	BrunSH	OK		330	11	56	5.89	Wm. Stothoff		-3.104	1.2785	3.356
26-2979	Route #46, Clifton, NJ	26-02-676	300	10	none		COOL	Shulton INC	BrunSH	poor		322	8	180	1.79	Rinbrand Well		-3.104	1.2785	3.356
26 3888	67 Marconi St., Clifton, NJ	26-02-677	105	6	unknown		DOM	Mrs. Barbara Kater	BrunSH	poor		10	1	36	0.28	Mabey Brothers		-3.492	1.0228	3.638
26 3218	10 Pilgrim Dr., Clifton, NJ	26-02-677	100	6	unknown		DOM	Charles Lay	BrunSH	poor		25	1	22	1.14	Mabey Brothers		-3.492	1.0228	3.638
26 6282	Clifton, NJ	26-02-679	450	12	none		IND	Nat'l. Std. Co., Athenia Steel	BrunSH	OK		205	8	130	1.58	Wm. Stothoff		-3.104	1.0228	3.268
26 4285	67 Maple Pl., Clifton, NJ	26-02-683	120	6	none		DOM	Mr. Bernhard S. Brask	BrunSH	poor		20	3	85	0 24	Ackerman Well		-2.522	1.5342	2.951
26 1951	791 Paulson Ave, Clifton, NJ	26-02-687	60	12	15		IND	Eureka Printing Co.	BrunSH	poor		282	8	36	7 83	Burrows Well D		-2.91	1.0228	3.084
26 110	Highland Ave., Clifton, NJ	26-02-688	400	10	none		IND	Federal Sweets and Biscuit Co.	BrunSH	poor		280	8	105	2.67	Rinbrand Well		-2.716	1.0228	2.902
26 854	Clifton, NJ	26-02-693	250	8	unknown		IND	Cosley and Co.	BrunSH	poor		105			ERR	Rinbrand Well		-1.94	1.5342	2.473
26 4669	165 Knapp Ave., Clifton, NJ	26-02-693	68	6	unknown		DOM	Mr. Walter Paluniak		no		10	24	20	0.50	Soren Nelson J		-1.94	1.5342	2.473
26 5341	761 Bloomfield Ave., Clifton, NJ	26-02-695	22.5	4	20	PVC	OBS	EXXON	BrunSH	good					ERR	Handex Corp.		-2.134	1.2785	2.487
26-5342	761 Bloomfield Ave., Clifton, NJ	26-02-695	22.5	4	20	PVC	OBS	EXXON	BrunSH	good					ERR	Handex Corp.		-2.134	1.2785	2.487
26 5343	761 Bloomfield Ave., Clifton, NJ	26-02-695	23	4	20	PVC	OBS	EXXON	BrunSH	good					ERR	Handex Corp.		-2.134	1.2785	2.487
26-3195	625 Main Ave., Passaic, NJ	26-02-9??	205	8	none		COOL	North Jersey Savings and Loan	BrunSH	poor		50	8	55	0 91	Rinbrand Well		-3.492	-1.278	3.718
26-3707	327 High St., Passaic, NJ	26-02-9??	75	6	unknown		DOM	Martha Const. Co.	BrunSH	poor		10	3	5	2 00	Rinbrand Well		-3.492	-1.278	3.718
26 3467	110 Washington Ave., Clifton, NJ	26-02-9??	170	6	unknown		DOM	Dr. L.P. Duca	BrunSH	poor		30	3	15	2 00	Rinbrand Well		-3.492	-1.278	3.718
26 1886	Maboro St. Clifton, NJ	26-02-919	333	8	unknown		COOL	Glopro Realty Co., INC	BrunSH	poor		92	8	122	0 75	Rinbrand Well		-3.104	0.2557	3.114
26-3349	12 Haman St., Clifton, NJ	26-02-921	150	6	unknown		DOM	Thaddeus Sokulski	BrunSH	poor		20	2	38	0.53	Harry Ammeraal		-2.91	0.7671	3.009
26-421	225 Clifton Blvd., Clifton, NJ	26-02-922	605	10	unknown		IND	Texstyle Corp.	BrunSH	poor		250			ERR	Rinbrand Well		-2.716	0.7671	2.822
26-1059	Lot 152A, Sargent Ave?, Clifton, NJ	26-02-925	400	10	unknown		IND	Standard Packaging Corp.	BrunSH	poor		190	8	230	0.83	Rinbrand Well		-2.716	0.5114	2.763
26-1060	Sargent Ave., Clifton, NJ	26-02-925	400	10	unknown			Standard Packaging Corp.	BrunSH	poor		190	8	253	0.75	Rinbrand Well		-2.716	0.5114	2.763
26 172	823, Clifton, NJ	26-02-926	200	8	unknown		A/C	Oneida Paper Products, INC	BrunSH	poor		100	8	57	1.75	Wm. J. Sikkema		-2.522	0.5114	2.573
26-3411	425 Grove St., Clifton, NJ	26-02-927	250	6	unknown		DOM	Dr. T. Sicilicin	BrunSH	poor		50	1	82	0.61	Mabey Brothers		-2.91	0.2557	2.921
26-3584	4 Speer Ave., Passaic, NJ	26-02-929	108	6	unknown		IRR	Arthur Mecklenburg	BrunSH	poor		20	2	32	0 63	Frank Bott, IN		-2.522	0.2557	2.534
26 6106	710 Van Houten Ave., Clifton, NJ	26-02-929	265	6	none		IND	Mario's Friendly Restaurant		no		50	4	35	1 43	Slater Bros. W		-2.522	0.2557	2.534
26-602	338 Chestnut Ave., Passaic, NJ	26-02-933	200	6	unknown		A/C	Binn's Trucking Co.	BrunSH	poor		10	4	41	0 24	Burrows Well D		-1.94	0.7671	2.086
26-5011	1 Clifton Blvd., Clifton, NJ	26-02-934	300	8	unknown		IND	Swipes Tube Corp.	BrunSH	poor		200	1	145	1 38	Samuel Stothof		-2.328	0.5114	2.383
26-3941	Van Houten Ave., Passaic, NJ	26-02-937	242	8	unknown			Raybestos Manhattan, INC	BrunSH	poor		7.5		62	0 12	Frank Bott, IN		-2.328	0.2557	2.342
26-2812	85 Third St., Clifton, NJ	26-02-937	600	8	none		IND	Fritzche Brothers	BrunSH	poor		210	8	175	1.20	Rinbrand Well		-2.328	0.2557	2.342
26 6142	307 Broadway, Passaic, NJ	26-02-939	26.5	7	15' x 4"	PVC	OBS	Shell Oil Co.	BrunSH	good					ERR	Handex Corp.		-1.94	0.2557	1.956
26 6147	307 Broadway, Passaic, NJ	26-02-939	28	8	22' x 4"	PVC	OBS	Shell Oil Co.	BrunSH	good					ERR	Handex Corp.		-1.94	0.2557	1.956
26-6148	307 Broadway, Passaic, NJ	26-02-939	39	8	none		OBS	Shell Oil Co.	BrunSH	good					ERR	Handex Corp.		-1.94	0.2557	1.956
26 6149	307 Broadway, Passaic, NJ	26-02-939	29	8	12' x 4"	PVC	OBS	Shell Oil Co.	BrunSH	good					ERR	Handex Corp.		-1.94	0.2557	1.956
26 6204	307 Broadway, Passaic, NJ	26-02-939	29.5	7	20' x 4"	PVC	OBS	Shell Oil Co.	BrunSH	good					ERR	Handex Corp.		-1.94	0.2557	1.956
26-3679	391 Main Ave., Clifton, NJ	26-02-942	135	6	unknown			Mr. Sal Calderaro		no		35			ERR	Allan C. McCon		-3.298	0	3.298
26-448	Minnisink Road, Totowa, NJ	26-02-953	32	6	unknown		DOM	Sisco INC		no		9	2	15	0 60	John Lauritsen		-2.522	0	2.522
26-3413	95 Howard Ave., Clifton, NJ	26-02-953	210	6	unknown		DOM	Michael Kalinesak	BrunSH	poor		50	1	64	0.78	Mabey Brothers		-2.522	0	2.522
26-3590	19 Orth Ave., Passaic, NJ	26-02-955	120	6	unknown			Leroy Zeger		no		30			ERR	Allan C. McCon		-2.716	-0.255	2.728
26-3195	625 Main Ave., Passaic, NJ	26-02-957	205	8	none		COOL	North Jersey Savings and Loan	BrunSH	poor		50	8	55	0.91	Rinbrand Well		-2.91	-0.511	2.954
26-3589	482 Passaic Ave., Passaic, NJ	26-02-957	125	6	unknown			Mr. N. Martini		no		80			ERR	Aaron Slater,		-2.91	-0.511	2.954
26-2231	443 Van Houten Ave., Passaic, NJ	26-02-961	500	8	unknown		IND	Speedway Car Wash Co.	BrunSH	poor		80		288	0.28	Rinbrand Well		-2.328	0	2.328
26 3323	16 Garfield St., Passaic, NJ	26-02-962	186	6	unknown		DOM	William Toth	BrunSH	poor		40	1	112	0.36	Mabey Brothers		-2.134	0	2.134
26-328	Van Houten & Broadway, Passaic, NJ	26-02-966	292	8	unknown		A/C	Guarantee Food Market	BrunSH	poor		60	8	50	1.20	Rinbrand Well		-1.94	-0.255	1.956
26-3096	199 N. Saddle Brook Rd., Hohokus, NJ	26-02-968	135	6	none		DOM	Mr. William Troast	BrunSH	poor		30	4	15	2.00	Rinbrand Well		-2.134	-0.511	2.194
26-3614	350 Blvd., Passaic, NJ	26-02-968	300	6	none		DOM	Passaic General Hospital	BrunSH	poor		15	8	275	0.05	Rinbrand Well		-2.134	-0.511	2.194
26-3589	482 Passaic Ave., Passaic, NJ	26-02-972	125	6	unknown			Mr. N. Martini		no		80			ERR	Aaron Slater,		-3.298	-0.767	3.386
26-3935	600 Route 46, Clifton, NJ	26-02-972	185	6	unknown			Fenelon Properties		no		50			ERR	Allan C. McCon		-3.298	-0.767	3.386
26 2407	750 Bloomfield Ave., Clifton, NJ	26-02-973	305	10	unknown		IND	Allen B. Dumont Laboratories	BrunSH	poor		33		104	0.32	Rinbrand Well		-3.104	-0.767	3.197
26-1558	Allwood Rd., Clifton, NJ	26-02-973	360	10	unknown		IND	Albert A. Stier	BrunSH	poor		375		180	2.08	Rinbrand Well		-3.104	-0.767	3.197
26-2567	Bloomfield Ave., Clifton, NJ	26-02-973	301	8	unknown		IND	Brooklift Realty Co.	BrunSH	poor		190	6	54	3.52	Frank J. Bott		-3.104	-0.767	3.197
26 ??47	451 Ninth Ave., Clifton, NJ	26-02-975	190	6	unknown		DOM	Luca and Vreeland		no				1	0.00	N. Jersey Arte		-3.298	-1.022	3.452
26 268	100 Bloomfield Ave., Clifton, NJ	26-02-976	350	10	unknown		COOL	Albert A. Stier, INC	BrunSH	poor		400	8	65	6.15	Rinbrand Well		-3.104	-1.022	3.268
26 3371	86 Beech St., Bloomfield, NJ	26-02-978	150	6	unknown		DOM	Mr. Eugene Mehrhof	BrunSH	poor		20		130	0.15	John Lauritsen		-3.298	-1.278	3.537

ID#	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER/COMMENT	X	Y	DIST
26 3213	35 Virginia Ave., Clifton, NJ	26-02-978	185	6	unknown		DOM	Mr. R.E. Doremus	BrunSH	poor		30	4	20	1.50	Rinbrand Well	-3.298	-1.278	3.537
26 3211	Clifton Blvd., Clifton, NJ	26-02-981	270	8	unknown		COOL	Mycalex Corp. of America	BrunSH	poor		60	6	15	4.00	Rinbrand Well	-2.91	-0.767	3.009
26 3667	98 Virginia Ave., Clifton, NJ	26-02-985	220	6	unknown			Mr. Robert Kaufman		no		20			ERR	Allan C. McCon	-2.716	-1.022	2.902
26 659	60 Clifton Blvd., Clifton, NJ	26-02-988	360	10	unknown		IND	Federal Sweets & Biscuit Co.	BrunSH	poor					ERR	Rinbrand Well	-2.716	-1.278	3.001
26 3862	180 Chittenden Rd., Clifton, NJ	26-02-993	260	6	unknown			Mr. Robert DeMassi	BrunSH	no		45			ERR	Allan C. McCon	-1.94	-0.767	2.086
26 3844	52 Cherry St., Clifton, NJ	26-02-999	55	6	unknown		DOM	Stephen Pirara	BrunSH	OK		10	2	45	0.22	David Nelson	-1.94	-1.278	2.323
26 3410	Passaic and Marsellins Place, Passaic, NJ	26-03-4??	130	6	unknown		DOM	Most Holy Name Church		no		40		10	4.00	Ray Bess	-1.746	1.0228	2.023
26 700	River Dr., E. Paterson, NJ	26-03-412	330	8	unknown			Mr. D. Vlomynck	BrunSH	poor		10	8	160	0.06	Rinbrand Well	-1.552	3.0684	3.438
26 295	#26, E. Paterson, NJ	26-03-416	134	6	unknown		DOM	Colon Const. Co.	BrunSH	poor		21	0.5	14	1.50	Wm. J. Sikkema	-1.358	2.8127	3.123
26 1097	Rt. 46, E. Paterson, NJ	26-03-416	125	6	unknown		A/C	Ross Diner		no		40	4		ERR	J. Foster	-1.358	2.8127	3.123
26 4996	85 Rt. 46 West (Jessie's Exxon)	26-03-417	18	4	4" X 15'	PVC	OBS	EXXON USA	gravel	good					ERR	Handex Corp.	-1.746	2.5570	3.096
26 4997	85 Rt. 46 West (Jessie's Exxon)	26-03-417	18	4	4" X 15'	PVC	OBS	EXXON USA	gravel	good					ERR	Handex Corp.	-1.746	2.5570	3.096
26 4998	85 Rt. 46 West (Jessie's Exxon)	26-03-417	18	4	4" X 15'	PVC	OBS	EXXON USA	gravel	good					ERR	Handex Corp.	-1.746	2.5570	3.096
26 4999	85 Rt. 46 West (Jessie's Exxon)	26-03-417	20	4	4" X 20'	PVC	OBS	EXXON USA	gravel	good					ERR	Handex Corp.	-1.746	2.5570	3.096
26 5000	85 Rt. 46 West (Jessie's Exxon)	26-03-417	20	4	4" X 20'	PVC	OBS	EXXON USA	gravel	good					ERR	Handex Corp.	-1.746	2.5570	3.096
26 4850	901 River Ave., Elmwood Park, NJ	26-03-418	120	6	unknown		DOM	Stefan Petryzyn	BrunSH	OK		30	5	7	4.29	Soren Nelson J	-1.552	2.5570	2.991
26 3548	161 Stafanic Ave., E. Paterson, NJ	26-03-422	100	6	unknown		DOM	Salvatore Sergi	BrunSH	poor		40	2	5	8.00	Frank Bott, IN	-0.97	3.0684	3.218
26-3755	114 Jewel St., Garfield, NJ	26-03-423	85	6	unknown		DOM	Matilda Bruno		no		16	8	40	0.40	John Lauritsen	-0.776	3.0684	3.165
26 5874	Boulevard & Market St., Elmwood Park, NJ	26-03-423	16	4	4" X 10'	PVC	OBS	Texaco	sand	poor					ERR	Handex Corp.	-0.776	3.0684	3.165
26-5875	Boulevard & Market St., Elmwood Park, NJ	26-03-423	17	4	4" X 10'	PVC	OBS	Texaco	sand	poor					ERR	Handex Corp.	-0.776	3.0684	3.165
26-5876	Boulevard & Market St., Elmwood Park, NJ	26-03-423	16	4	4" X 10'	PVC	OBS	Texaco	sand	poor					ERR	Handex Corp.	-0.776	3.0684	3.165
26-5877	Boulevard & Market St., Elmwood Park, NJ	26-03-423	16.5	4	4" X 10'	PVC	OBS	Texaco	sand	poor					ERR	Handex Corp.	-0.776	3.0684	3.165
26 3257	36 Bellport Pl., Garfield, NJ	26-03-423	65	6	unknown		DOM	George Stefanco		no		30		30	1.00	John Lauritsen	-0.776	3.0684	3.165
26 3767	42 Linwood Ave., E. Paterson, NJ	26-03-424	135	6	unknown		DOM	Charles Fournier		no		15	8	30	0.50	John Lauritsen	-1.164	2.8127	3.044
26 3546	401 Madeline Ave., Garfield, NJ	26-03-425	70	6	unknown		DOM	Louis Skawinski	BrunSH	poor		15	2	8	1.88	Frank J. Bott	-0.97	2.8127	2.975
26-2112	81 Fifth St., Saddle Brook, NJ	26-03-426	200	10	unknown		IND	Amloid Co.	BrunSH	poor		66	8	111	0.59	Burrows Well D	-0.776	2.8127	2.917
* 26-931	Market St. & Railroad, E. Paterson, NJ	26-03-426	200	6	unknown		Public	Borough of E. Paterson	BrunSH	poor		180	8	75	2.40	Rinbrand Well	-0.776	2.8127	2.917
26 242?	23 Rt. 24, E. Paterson, NJ	26-03-427	165	6	unknown		DOM	Mohawk Motors	BrunSH	poor		30	1	45	0.67	Wm. J. Sikkema	-1.164	2.5570	2.809
26 195	891 River Rd., E. Paterson, NJ	26-03-428	180	6	unknown		?	Mr. Wayne Harper	BrunSH	poor		10		?	ERR	Rinbrand Well	-0.97	2.5570	2.734
26 3672	398 Grace Ave., Garfield, NJ	26-03-429	76	6	unknown		DOM	Peter Skawinski	BrunSH	poor		15	2.5	7.5	2.00	Frank Bott, IN	-0.776	2.5570	2.672
26 3248	396 Grace Ave., Garfield, NJ	26-03-429	63	6	unknown		DOM	Stanley Wadecki	BrunSH	poor		40	2	5	8.00	Harry Ameraal	-0.776	2.5570	2.672
26 5037	475 Boulevard, Elmwood Park, NJ	26-03-433	250	8	unknown		IND	P.R.C. Corp.	sand	poor		70	2	68	1.03	Glenn Slater	-0.194	3.0684	3.074
26-3801	53 Linden Ave., E. Paterson, NJ	26-03-435	100	6	unknown		DOM	Louis German		no		10		30	0.33	John Lauritsen	-0.388	2.8127	2.839
26-703	147 5th St., Saddle River, NJ	26-03-435	150	6	unknown		IND	Hyway Cinder Block		no		50	4	10	5.00	Foster Well Dr	-0.388	2.8127	2.839
26-476	6 Echo Pl., E. Paterson, NJ	26-03-435	100	6	unknown		DOM	Frank Georgi	BrunSH	poor		20			ERR	Georgi Brother	-0.388	2.8127	2.839
26 2112	81 Fifth St., Saddle Brook, NJ	26-03-436	200	10	unknown		IND	Amloid Co.	BrunSH	poor		66	8	111	0.59	Burrows Well D	-0.194	2.8127	2.819
26 3552	64 Pacific Ave., Garfield, NJ	26-03-437	62	6	unknown		DOM	Alex Domonkos		no		20	6	30	0.67	John Lauritsen	-0.582	2.5570	2.622
26-730	5th St., Rochelle Park, NJ	26-03-437	6	6	unknown		COOL	Amloid Plastics Co.		no		35	4	21	1.67	Foster	-0.582	2.5570	2.622
26-3800	175 Franklin St., E. Paterson, NJ	26-03-438	65	6	unknown		DOM	Mr. Leonard Widovic		no		30	24	40	0.75	John Lauritsen	-0.388	2.5570	2.586
26-3670	384 Madeline Ave., Garfield, NJ	26-03-438	70	6	unknown		DOM	Eugine Majdanski	BrunSH	poor		60	2	2	30.00	Frank Bott, IN	-0.388	2.5570	2.586
26-3550	125 Autwater Lane, Garfield, NJ	26-03-438	200	6	unknown		DOM	Carmine T. Perrapto		no		?		30	ERR	John Lauritsen	-0.388	2.5570	2.586
26-5516	Pavan's Exxon, River Rd., Clifton, NJ	26-03-447	25	4	4" X 10'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	-1.746	1.7899	2.500
26-5517	Pavan's Exxon, River Rd., Clifton, NJ	26-03-447	25	4	4" X 10'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	-1.746	1.7899	2.500
26-5439	Pavan's Exxon, River Rd., Clifton, NJ	26-03-448	25	4	4" X 15'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	-1.552	1.7899	2.369
26 5440	Pavan's Exxon, River Rd., Clifton, NJ	26-03-448	30	4	4" X 20'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	-1.552	1.7899	2.369
26-617	Rt. 4, E. Paterson, NJ	26-03-4??	120	6	unknown		DOM	George Kaminsky	BrunSH	poor		18	4	15	1.20	J. Foster	-1.746	1.0228	2.023
26 4555	10 Stefanic Ave., E. Paterson, NJ	26-03-452	477	6	none		IND	Empire Overall		no		55			ERR	Jos. C. Haerts	-0.97	2.3013	2.497
* 26 4063	Midland Ave., Garfield, NJ	26-03-453	475	10	none		Public	City of Garfield	BrunSH	poor		77	33	249	0.31	Rinbrand Well	-0.776	2.3013	2.428
26 3775	Cedar St. & Botany, Garfield, NJ	26-03-453	160	6	unknown		DOM	Mr. Andrew Gretchen		no		20	12	15	1.33	John Lauritsen	-0.776	2.3013	2.428
26-2880	221 Banta Ave., Garfield, NJ	26-03-455	190	6	none		COOL	Stull Engraving Co.	BrunSH	poor		45	3	96	0.47	Ernest S. Rich	-0.97	2.0456	2.263
26 4101	221 Banta Ave., Garfield, NJ	26-03-455	375	6	none		COOL	Stull Engraving Co.	BrunSH	poor		35	3	254	0.14	Ernest S. Rich	-0.97	2.0456	2.263
26 4276	221 Banta Ave., Garfield, NJ	26-03-455	397	6	none		COOL	Stull Engraving Co.	BrunSH	poor		55	3	224	0.25	Ernest S. Rich	-0.97	2.0456	2.263
* 26 4016	Midland Ave, Garfield, NJ	26-03-456	400	10	none		Public	City of Garfield	BrunSH	poor		320	36	83	3.95	Rinbrand Well	-0.776	2.0456	2.187

ID#	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER COMMENT	X	Y	DIST
* 26 4017	Outwater La. at Railroad, Garfield, NJ	26-03-456	710	10	none		Public	City of Garfield		no		30	?	290	0.10	Rinbrand Well	-0.776	2.0456	2.187
26 1314	1 Ackerman Ave. (Chlorine Bldg), Clifton,	26-03 457	250	8	none		DOM	Whippany Paper Bd. Co.		no		312	8	89	3.51	Henry A. Kieff	-1.164	1.7899	2.135
26 3721	311 Passaic St., Garfield, NJ	26-03-461	63	6	unknown		DOM	Tom Grisco		no		15	8	20	0.75	John Lauritsen	-0.582	2.3013	2.373
26 3611	2 Bank St., Paterson, NJ	26-03-464	100	6	unknown		DOM	Joseph Domonkos	BrunSH	poor		20	5	50	0.40	John Lauritsen	-0.582	2.0456	2.126
26 3776	6 Oak St., E. Paterson, NJ	26-03-464	100	6	unknown'		DOM	Mr. Pat Puglice		no		?	?	?	ERR	John Lauritsen	-0.582	2.0456	2.126
26 600	541 Midland Ave., Garfield, NJ	26-03-466	275	8	unknown		IND	Joseph Reis	BrunSH	poor		50	6	155	0.32	Rinbrand Well	-0.194	2.0456	2.054
26 1646	55 Clifton Ave., Clifton, NJ	26-03-472	120	6	unknown		A/C	New Apostolic Church	BrunSH	poor		25		0	ERR	Burrows Well D	-1.552	1.5342	2.182
26 4009	Fleischer's Break - Botany Rd., Garfield,	26-03-483	400	10	unknown		TEST	City of Garfield	BrunSH	OK		25	2	95	0.26	Burrows Well D	-0.776	1.5342	1.719
26-3609	600 Midland Ave., Garfield, NJ	26-03-486	110	6	unknown		DOM	Dr. Daniel Conte	BrunSH	poor		30	6	15	2.00	John Lauritsen	-0.776	1.2785	1.495
26 14	15 Mattimore St., Passaic, NJ	26-03-488	501	8	none		COOL	Arrow Plastics Corp.	gravel	poor		50	16	110	0.45	Rinbrand Well	-0.97	1.0220	1.409
26 5149	Grand & Cambridge St., Garfield, NJ	26-03-489	21	26	26" X 17'	steel	Gasoline	NJ DEP-Div Hazard. Subst.	sand	poor					ERR	Handex Corp.	-0.776	1.0220	1.203
26-4010	Grand St., Garfield, NJ	26-03-489	276	10	none			City of Garfield	BrunSH	OK					ERR	Burrows Well D	-0.776	1.0220	1.203
26 6602	125 Clark St., Garfield, NJ	26-03-494	19.5	4	4" X 19.5'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	A.C. Schultes	-0.582	1.2785	1.404
26 6544	125 Clark St., Garfield, NJ	26-03-495	19	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	Handex Corp.	-0.388	1.2785	1.336
26-6545	125 Clark St., Garfield, NJ	26-03-495	19	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	Handex Corp.	-0.388	1.2785	1.336
26 6546	125 Clark St., Garfield, NJ	26-03-495	17	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	Handex Corp.	-0.388	1.2785	1.336
26 6547	125 Clark St., Garfield, NJ	26-03-495	17	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	Handex Corp.	-0.388	1.2785	1.336
26 6548	125 Clark St., Garfield, NJ	26-03-495	18	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	Handex Corp.	-0.388	1.2785	1.336
26 3577	44 Rellport Pl., Garfield, NJ	26-03-497	100	6	unknown		DOM	Mr. Carmine T. Perrapato		no		?	6	15	ERR	John Lauritsen	-0.582	1.0220	1.176
26 6184	100 W. Hunter Ave., Maywood, NJ	26 03-5??	16	6	6" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0220	1.022
26 6185	100 W. Hunter Ave., Maywood, NJ	26-03-5??	20	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0220	1.022
26 6186	100 W. Hunter Ave., Maywood, NJ	26-03-5??	14	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0220	1.022
26 6187	100 W. Hunter Ave., Maywood, NJ	26-03-5??	17.5	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0220	1.022
26 6188	100 W. Hunter Ave., Maywood, NJ	26-03-5??	11	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0220	1.022
26 6189	100 W. Hunter Ave., Maywood, NJ	26-03-5??	9	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0220	1.022
26 6190	100 W. Hunter Ave., Maywood, NJ	26-03-5??	8.5	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0220	1.022
26 6191	100 W. Hunter Ave., Maywood, NJ	26-03-5??	8	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0220	1.022
26-6192	100 W. Hunter Ave., Maywood, NJ	26-03-5??	4	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0220	1.022
26 610	169 Millbank St., Lodi, NJ	26-03-5??	150	6	unknown			Mathe Chemical		no		70	8	8	8.75	Foster Well Dr	0	1.0220	1.022
26 4003	400 Dewey Ave., Saddle Brook, NJ	26-03-511	100	6	unknown		DOM	Stephen J. Hrubec	BrunSH	poor		35	2	13	2.69	Frank Bott, IN	0	3.0684	3.068
26 3855	9th St., Saddle Brook, NJ	26-03-517	93	6	unknown		DOM	Mr. Stephen Thompson		no		?	?	?	ERR	John Lauritsen	0	2.5570	2.557
26 4494	81 5th St., Saddle Brook, NJ	26-03-517	250	6	none		IND	Plastic Toys, INC	BrunSH	poor		75			ERR	Jos. C. Haerts	0	2.5570	2.557
26-294	#26, Rochelle Park, NJ	26-03-517	80	6	unknown		DOM	Colon Const. Co.	BrunSH	poor		30	2	0	ERR	Wm. Sikkema	0	2.5570	2.557
* 26 4905	Smith Elem. Sch., Cambidge Ave., Saddle Br	26-03-518	200	6	none		Public	Board of Educ., Twp. of Saddle B	BrunSH	OK		33.5	4	29.4	1.14	New Jersey Dri	0.194	2.5570	2.564
26 6967	660 Main St., Lodi, NJ	26-03-523	18	4	4" X 15'	PVC	OBS	Solar Oil	BrunSH	good					ERR	Handex Corp.	0.97	3.0684	3.218
26 6968	660 Main St., Lodi, NJ	26-03-523	14	4	4" X 10'	PVC	OBS	Solar Oil	BrunSH	good					ERR	Handex Corp.	0.97	3.0684	3.218
26 6969	660 Main St., Lodi, NJ	26-03-523	17	4	4" X 14'	PVC	OBS	Solar Oil	BrunSH	good					ERR	Handex Corp.	0.97	3.0684	3.218
26-6970	660 Main St., Lodi, NJ	26-03-523	12	4	4" X 10'	PVC	OBS	Solar Oil	BrunSH	good					ERR	Handex Corp.	0.97	3.0684	3.218
26-5888	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunSH	good					ERR	Handex Corp.	0.97	2.8127	2.975
26-5889	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunSH	good					ERR	Handex Corp.	0.97	2.8127	2.975
26 5890	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunSH	good					ERR	Handex Corp.	0.97	2.8127	2.975
26 5891	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunSH	good					ERR	Handex Corp.	0.97	2.8127	2.975
26 5523	460 N. Main St., Lodi, NJ	26-03-529	15	4	4" X 10'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	0.97	2.5570	2.734
26-5524	460 N. Main St., Lodi, NJ	26-03-529	15	4	4" X 10'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	0.97	2.5570	2.734
26-359	Woodland Ave. & Rt. 17, Rochelle Park, NJ	26-03-531	103	6	unknown		DOM	Metalfab	BrunSH	poor		40	2	2.5	16.00	Georgi Brother	1.164	3.0684	3.281
26 4949	Rt. 17 N., Haywood, NJ	26-03-531	19.5	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunSH	good					ERR	Handex Corp.	1.164	3.0684	3.281
26 4964	Rt. 17 N., Haywood, NJ	26-03-531	18	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunSH	good					ERR	Handex Corp.	1.164	3.0684	3.281
26 4965	Rt. 17 N., Haywood, NJ	26-03-531	17	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunSH	good					ERR	Handex Corp.	1.164	3.0684	3.281
26 4966	Rt. 17 N., Haywood, NJ	26-03-531	17	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunSH	good					ERR	Handex Corp.	1.164	3.0684	3.281
26 4967	Rt. 17 N., Haywood, NJ	26-03-531	20	4	4" X 13'	PVC	OBS	Gulf Oil Co.	BrunSH	good					ERR	Handex Corp.	1.164	3.0684	3.281
26 3936	107 Essex St., Maywood, NJ	26-03-532	196	6	unknown			Snappy Car Wash T/A Jax Car Wash	BrunSH	poor		20	2	31	0.65	D.F. Well Dril	1.358	3.0684	3.355
26 1025	48 Woodland Ave., Rochelle Park, NJ	26-03 535	100	6	unknown			Joseph Brizak	BrunSH	poor		10	2	15	0.67	Rinbrand Well	1.358	2.8127	3.123
26 2771	87 Rt. 17, Maywood, NJ	26-03 535	300	8	unknown		IND	Aquarium, INC	BrunSH	poor		172	8	43.5	3.95	Burrows Well D	1.358	2.8127	3.123

ID#	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER	COMMENT	X	Y	DIST
26 4050	446 Saddle River Rd., Saddle Brook, NJ	26-03-537	67	6	unknown		DOM	Alexander Buday	BrunSH	poor		30	3	15	2.00	Pine Brook Wel		1.164	2.5570	2.809
* 26 1620	Lodi, NJ	26-03-538	403	12	unknown		???	Borough of Lodi	BrunSH	poor		600	24	110.9	5.41	Artesian Well		1.358	2.5570	2.895
26 5248	318 Seventh St., Saddle Brook, NJ	26-03-541	79	6	unknown		DOM	John Murdock	BrunSH	poor		35	2	10	3.50	E.S. Richardso		0	2.3013	2.301
26 5621	283 Outwater Ln., Saddle Brook, NJ	26-03-541	108	6	unknown		DOM	Renaldo Clappina	BrunSH	poor		40	2	16	2.50	E.S. Richardso		0	2.3013	2.301
* 26 4064	Dolphin (Pulaski Pk.), Garfield, NJ	26-03-542	405	10	none		Public	City of Garfield	BrunSH	poor		405	72	199	2.04	Rinbrand Well		0.194	2.3013	2.309
26 640	249 St. Hy. 6, Saddle River, NJ	26-03-542	90	6	unknown		DOM	Paul Bianco		no		25	4	20	1.25	J. Foster		0.194	2.3013	2.309
26 3557	177 Market St., Garfield, NJ	26-03-542	95	6	unknown		DOM	Stanley Kobylarz		no		?	?	?	ERR	John Lauritsen		0.194	2.3013	2.309
26 628	Rt. 6, Saddle River Twp.	26-03-545	90	8	unknown		DOM	Leo Olko (Restaurant)	BrunSH	poor		60	4	2	30.00	J. Foster, Jr.		0.194	2.0456	2.054
26 7043	650 California St., Lodi, NJ	26-03-549	12		unknown		OBS	Hexcel Corp.	sand	OK					ERR	Warren George,		0.388	1.7899	1.831
26 5217	200 Gregg St., Lodi, NJ	26-03-549	15	2	unknown		OBS	Inmont Corp.	gravel	good					ERR	Warren George,		0.388	1.7899	1.831
26 5218	200 Gregg St., Lodi, NJ	26-03-549	16	2	unknown		OBS	Inmont Corp.	gravel	good					ERR	Warren George,		0.388	1.7899	1.831
26 5219	200 Gregg St., Lodi, NJ	26-03-549	18	2	unknown		OBS	Inmont Corp.	gravel	good					ERR	Warren George,		0.388	1.7899	1.831
26 5220	200 Gregg St., Lodi, NJ	26-03-549	15	2	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5221	200 Gregg St., Lodi, NJ	26-03-549	104	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5222	200 Gregg St., Lodi, NJ	26-03-549	80	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5223	200 Gregg St., Lodi, NJ	26-03-549	55	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5224	200 Gregg St., Lodi, NJ	26-03-549	102	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5225	200 Gregg St., Lodi, NJ	26-03-549	71	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5226	200 Gregg St., Lodi, NJ	26-03-549	46	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5227	200 Gregg St., Lodi, NJ	26-03-549	102	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5228	200 Gregg St., Lodi, NJ	26-03-549	70	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5229	200 Gregg St., Lodi, NJ	26-03-549	45	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26-5230	200 Gregg St., Lodi, NJ	26-03-549	103	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5231	200 Gregg St., Lodi, NJ	26-03-549	71	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5232	200 Gregg St., Lodi, NJ	26-03-549	40	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,		0.388	1.7899	1.831
26 5233	200 Gregg St., Lodi, NJ	26-03-549	17	2	unknown		OBS	Inmont Corp.	till	good					ERR	Warren George,		0.388	1.7899	1.831
* 26 3184	Columbia Ave., Lodi, NJ	26-03-554	510	10	none		public	Lodi Dept. of Public Works	BrunSH	poor		100	24	182	0.55	Rinbrand Well		0.582	2.0456	2.126
26-3526	381 Semuel Ave., Garfield, NJ	26-03-557	115	6	unknown		DOM	Andrew Zientek		no		20	6	?	ERR	John Lauritsen		0.582	1.7899	1.882
26-3529	Semuel Ave., Garfield, NJ	26-03-556	140	6	unknown		DOM	Steve Kovacs, Sr.		no		20	8	50	0.40	John Lauritsen		0.97	2.0456	2.263
26 3527	212 Market St., Garfield, NJ	26-03-556	90	6	unknown		DOM	James V. Failla		no		25	8	50	0.50	John Lauritsen		0.97	2.0456	2.263
26 3579	165 Main St., Lodi, NJ	26-03-557	400	6	none		IND	Washine Chemical Co.	BrunSH	poor		100	1	399	0.25	Wm. Stethoff C		0.582	1.7899	1.882
26-32	Rt. 6, Lodi, NJ	26-03-559	86	6	none		DOM	Mr. H. Scholten	BrunSH	poor		25	2	14	1.79			0.97	1.7899	2.035
26-2891	Rt. 46, Saddle Brook, NJ	26-03-559	81	6	unknown		Restaur	Lake Developers		no		30	3	25	1.20	Pine Brook Wel		0.97	1.7899	2.035
26-3528	Semuel Ave., Garfield, NJ	26-03-559	100	6	unknown		DOM	William Bigoss		no		20	?	50	0.40	John Lauritsen		0.97	1.7899	2.035
26 825	165 Main St., Lodi, NJ	26-03-562	105	6	none		IND	Lodi Realty Corp.	BrunSH	poor		50	1	14	3.57	Ernest S. Rich		1.358	2.3013	2.672
26-787	Route 17, Lodi, NJ	26-03-563	86	6	none		?	Truching & Trans. Co. INC	BrunSH	poor		50	1	?	ERR	Ernest S. Rich		1.552	2.3013	2.775
26-1355	Essex St. & Rt. 17, Lodi, NJ	26-03-563	301	8	unknown		A/C	Lodi Shopping Center, INC	BrunSH	poor		350	8	75	4.67	Burrows Well D		1.552	2.3013	2.775
26-2171	Medell's Shoppers World, Rt. 17, Lodi, NJ	26-03-563	300	8	unknown		Diffus	Lodi Shopping Center, INC	BrunSH	poor		290	24	54	5.37	Burrows Well D		1.552	2.3013	2.775
26 3572	113 Essex St., Maywood, NJ	26-03-563	400	10	none		COOL	Jos. S. Muscarelle, INC	BrunSH	poor		159	8	175	0.91	Rinbrand Well		1.552	2.3013	2.775
26-213	Route 17, Lodi, NJ	26-03-566	200	8	unknown		IND	Frank Dini Co.	BrunSH	poor		55	8	15	3.67	Rinbrand Well		1.552	2.0456	2.567
26 130	Lodi, NJ	26-03-566	435	10	unknown		IND	The Interchemical Corp.	BrunSH	poor		187	12	178	1.05	Wm. Stethoff C		1.552	2.0456	2.567
26-4240	?????--Unreadable copy	26-03-566	300	12	none		Test		BrunSH	poor		237	24	30	7.90	Burrows Well D		1.552	2.0456	2.567
26-2901	199 Garibaldi Ave., Lodi, NJ	26-03-567	400	10	none		IND	Charles F. Fields	BrunSH	poor		110	8	178	0.62	Rinbrand Well		1.164	1.7899	2.135
26-650	26 Passaic St., Rochelle Park, NJ	26-03-567	75	6	unknown		DOM	Dan Newhouse	BrunSH	poor		50	3	0	ERR	John W. Sihhoo		1.164	1.7899	2.135
26-3034	60 Industrial Rd., Lodi, NJ	26-03-567	400	8	none		COOL	Master Etching Corp.	BrunSH	poor		105	8	167	0.63	Rinbrand Well		1.164	1.7899	2.135
26 1010	Garfield Ave., Lodi, NJ	26-03-57?	459	12	unknown			Borough of Lodi	BrunSH	OK		157		85	1.85	Artesian Well		0	1.0228	1.022
26-2067	113 Farnham Ave., Garfield, NJ	26-03-577	303	6	unknown		IND	YOO-HOO Beverage Co.	BrunSH	poor		95	8	138	0.69	Frank J. Bott		0	1.0228	1.022
26 3155	Boys Club, Main St., Lodi, NJ	26-03-582	450	10	none		Test	Lodi Dept. of Public Works	BrunSH	poor		175	28	249	0.70	Rinbrand Well		0.776	1.5342	1.719
26 4079	Westervelt Pl., Lodi, NJ	26-03-584	70	6	unknown		DOM	Mr. Grasso	BrunSH	poor					ERR	John Lauritsen		0.582	1.2785	1.404
* 26 3183	Cora Bella Ave., Lodi, NJ	26-03-591	470	10	none		Public	Borough of Lodi	BrunSH	poor		285	40	137	2.08	Rinbrand Well		1.164	1.5342	1.925
26 7369	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	23	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.		1.552	1.5342	2.182
26 7370	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.		1.552	1.5342	2.182
26 7371	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.		1.552	1.5342	2.182

ID	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER	COMMENT	X	Y	DIST
26 7372	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.		1.552	1.5342	2.182
26 7373	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.		1.552	1.5342	2.182
26 7374	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.		1.552	1.5342	2.182
26 7375	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.		1.552	1.5342	2.182
26 7376	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.		1.552	1.5342	2.182
26 1216	3 Madison Ave., Hasbrouck Hts., NJ	26-03-597	112	6	unknown		DOM	Ernest S. Richardson	BrunSH	poor		15	1	13	1.15	Ernest S. Rich		1.164	1.0228	1.549
26 8558	53 Union St., Lodi, NJ	26-03-597	60	6	unknown		DOM	Joseph Anseline	BrunSH	poor		25	8	24	1.04	John Lauritsen		1.164	1.0228	1.549
26 5557	454 Blvd, Hasbrouck Hts., NJ	26-03-598	230	6	unknown		Laundry	J. Torre	BrunSH	poor		65	2	76	0.86	Ernest S. Rich		1.358	1.0228	1.700
26 3650	339 Golf Ave., Maywood, NJ	26-03-611	170	5	none		DOM	Henry Menzer		poor		29	4	97	0.30	Dwight H. Ward		1.746	3.0684	3.530
26 5847	121 E. Hunter Ave., Maywood, NJ	26-03-615	315	8	none			Malt Products Corp.	BrunSH	poor		300	0.5	110	2.73	Sikkema Well D		1.94	2.8127	3.416
26 5039	40 Polifly Rd., Hackensack, NJ	26-03-619	305	6	none		DOM	Players Club	BrunSH	poor		30	6	144	0.21	Rinbrand Well		2.134	2.5570	3.330
26 3952	435 Sumit Ave., Hackensack, NJ	26-03-621	150	6	none		DOM	Howard Mack	BrunSH	poor		35	3	11	3.18	??		2.328	3.0684	3.851
26 936	River St., Hackensack, NJ	26-03-623	189	6	6" X 10'	everdur		Hackensack Water Co.	BrunSH	good		215		81	2.65	Artesian Well		2.716	3.0684	4.097
26 882	Pipe Yard, Hackensack Ave., Hackensack, NJ	26-03-632	194	8	8" X 25'	everdur		Hackensack Water Co.	BrunSH	good		670	24	64	10.47	Artesian Well		3.104	3.0684	4.364
26 914	Pipe Yard, Hackensack Ave., Hackensack, NJ	26-03-632	168	20	20" X 20'	everdur	Public	Hackensack Water Co.	BrunSH	good		1700	24	83	20.48	Artesian Well		3.104	3.0684	4.364
26 1034	Pipe Yard, Hackensack Ave., Hackensack, NJ	26-03-632	190	20	20" X 20'	everdur		Hackensack Water Co.	BrunSH	good		1420	75	100	14.20	Artesian Well		3.104	3.0684	4.364
26 641	Euclid Ave. & Main St., Hackensack, NJ	26-03-635	241	6	10" X 15'	everdur	A/C	Red Lion Inn	BrunSH	poor		400	8	82	4.88	Burrows Well D		3.104	2.8127	4.188
26 6748	160 Passaic St., Hackensack, NJ	26-03-635	12	4	4" X 10'	PVC	OBS	Shell Oil Co.	sand	good					ERR	Handex Corp.		3.104	2.8127	4.188
26 4404	146 Midland Ave., E. Paterson, NJ	26-03-635	95	6	unknown		DOM	John Russell	BrunSH	poor		35	3	40	0.88	Pine Brook Wel		3.104	2.8127	4.188
26 2626	Conklin Pl., Hackensack, NJ	26-03-637	189	6	unknown		A/C	First Baptist Church Assoc.		poor		200	8	0	ERR	Burrows Well D		2.91	2.5570	3.873
26 6139	160 Passaic St., Hackensack, NJ	26-03-638	13	4	4" X 10'	PVC	OBS	Shell Oil Co.	sand	good					ERR	Handex Corp.		3.104	2.5570	4.021
26 6140	160 Passaic St., Hackensack, NJ	26-03-638	13	4	4" X 10'	PVC	OBS	Shell Oil Co.	sand	good					ERR	Handex Corp.		3.104	2.5570	4.021
26 6141	160 Passaic St., Hackensack, NJ	26-03-638	13	4	4" X 10'	PVC	OBS	Shell Oil Co.	sand	good					ERR	Handex Corp.		3.104	2.5570	4.021
26 5511	700 Pomander Walk, Teaneck, NJ	26-03-638	218	6	unknown		DOM	Teaneck Swim Club	BrunSH	poor		60	2	66	0.91	E. S. Richards		3.104	2.5570	4.021
26 4762	194 Daniel St., Hackensack, NJ	26-03-645	186	6	none		COOL	Kings Custom Molding INC		no		50	2	80	0.63	E. S. Richards		1.94	2.0456	2.819
26 3655	5 Fairway Ave., Maywood, NJ	26-03-646	100	6	none		DOM	Mr. Arthur Abrams	BrunSH	poor		20	4	10	2.00	Rinbrand Well		2.134	2.0456	2.956
26 1030	300 S. Summit Ave., Hackensack, NJ	26-03-648	150	6	unknown			Lang Design Service	BrunSH	poor		10	2	5	2.00	Rinbrand Well		1.94	1.7899	2.639
26 1489	Newman St., Hackensack, NJ	26-03-6??	390	8	none		IND	Galler Seven-Up Bottling Co.	BrunSH	poor		253	8	62	4.08	Artesian Well		1.746	1.0228	2.023
26 1642	Central Ave., Rochelle Park, NJ	26-03-652	100	6	unknown		DOM	Frank Toriello and Sons	BrunSH	poor		20	3	12	1.67	Rinbrand Well		2.522	2.3013	3.414
26 2081	Huyler St., S. Hackensack, NJ	26-03-652	228	6	unknown			Spinnerin Yarn Co. INC	BrunSH	good		17.5	6	71.5	0.24	Artesian Well		2.522	2.3013	3.414
26 1257	First St., Hackensack, NJ	26-03-655	200	8	unknown		DOM	Hackensack Board of Education	BrunSH	poor		?	?	?	ERR	Rinbrand Well		2.522	2.0456	3.247
26 1776	100 Orchard St., Hackensack, NJ	26-03-655	120	10	8" X 15'	everdur	COOL	Hackensack Cable Co.	BrunSH	poor		171	8	72	2.38	Rinbrand Well		2.522	2.0456	3.247
26 2059	Huyler St., S. Hackensack, NJ	26-03-655	140	6	unknown			Spinnerin Yarn Co. INC	BrunSH	good					ERR	Artesian Well		2.522	2.0456	3.247
26 1990	Garaboldi Ave., Lodi, NJ	26-03-656	310	10	unknown		IND	Charles S. Fields	BrunSH	poor		200	?	?	ERR	Rinbrand Well		2.716	2.0456	3.400
26 2650	130 S. Newman St., Hackensack, NJ	26-03-676	220	6	none		COOL	Cast Optics Corp.	BrunSH	poor		60	4	28	2.14	Rinbrand Well		2.134	1.2785	2.487
26 2629	125 Newman St., Hackensack, NJ	26-03-657	200	6	none		COOL	Cast Optics Corp.		no		60	4	28	2.14	Rinbrand Well		2.328	1.7899	2.936
26 5083	92 Meyer St., Hackensack, NJ	26-03-657	225	6	unknown		laundry	Victory on the Sea Laundromat	BrunSH	poor		52	2	82	0.63	E. S. Richards		2.328	1.7899	2.936
26 1883	Middle Town Rd., Hackensack, NJ	26-03-659	400	8	unknown		COOL	Bowler City	BrunSH	poor		108	8	10	10.80	Rinbrand Well		2.716	1.7899	3.252
26 4187	Salem & Moore St., Hackensack, NJ	26-03-665	660	6	none			Peoples Trust Co.	BrunSH	poor		20	8		ERR	Rinbrand Well		3.104	2.0456	3.717
26 28	Fox Theatre, 309 Main St., Hackensack, NJ	26-03-661	252.5	8	8" X 18.5'	Everdur	A/C	Metropolitan Playhouses, INC	BrunSH	good		150		116	1.29	B.W. Lawman &		2.91	2.3013	3.710
26 143	826, Hackensack, NJ	26-03-664	325	6	unknown		carwash	Central Auto Laundry	BrunSH	poor		50	8	58	0.86	J.W. Sikkema		2.91	2.0456	3.557
26 4693	Cedar Ln. at River, Teaneck, NJ	26-03-666	276	6	none		DOM	Teaneck Pool Rec. Facility	BrunSH	poor		65	8	85	0.76	Rinbrand Well		3.298	2.0456	3.880
26 819	Morris and River Sts., Hackensack, NJ	26-03-667	525	9	unknown			FoodFair Stores INC	BrunSH	poor		55	3	200	0.28	Burrows Well D		2.91	1.7899	3.416
26 248	River St., Hackensack, NJ	26-03-668	504	10	none		COOL	Bergen Evening Record	BrunSH	OK		140	8	157	0.89	Artesian Well		3.104	1.7899	3.583
26 4815	Daniel St., Hackensack, NJ	26-03-673	110	6	unknown		wash	Frank Faustini	BrunSH	poor		25	2	16	1.56	E.S. Richardso		2.134	1.5342	2.628
26 1042	Pleasant Ave., Hackensack, NJ	26-03-674	93	6	unknown		IND	Peter Cantelme	BrunSH	poor		20	1	12	1.67	E.S. Richardso		1.746	1.2785	2.164
26 3851	125 Newman St., Hackensack, NJ	26-03-676	200	6	unknown		COOL	Cast Optics Corp.	BrunSH	poor		100	4	45	2.22	Rinbrand Well		2.134	1.2785	2.487
26 3856	125 Newman St., Hackensack, NJ	26-03-676	288	6	unknown		COOL	Cast Optics Corp.	BrunSH	poor		50	?	80	0.63	Rinbrand Well		2.134	1.2785	2.487
26 3858	125 Newman St., Hackensack, NJ	26-03-676	400	6	unknown		COOL	Cast Optics Corp.	BrunSH	poor		60	4	245	0.24	Rinbrand Well		2.134	1.2785	2.487
26 2081	Green & Wesly Sts., S. Hackensack, NJ	26-03-677	228	6	unknown			Spinnerin Yarn Co.	BrunSH	good		17.5	6	71.5	0.24	Artesian Well		1.746	1.0228	2.023
26 731	Cities Ser. Gas Station, Boulevard, Hacken	26-03-678	88	6	unknown		DOM	Harrison Imp. Co.		no		20	2	2	10.00	Mabey Brothers		1.94	1.0228	2.193
26 2059	Green & Wesly Sts., S. Hackensack, NJ	26-03 67?	140	6	unknown			Spinnerin Yarn Co.	BrunSH	good					ERR	Artesian Well		1.746	1.0228	2.023
26 1745	156 Hackensack Ave., Hackensack, NJ	26-03 681	114	6	unknown		COOL	Selly Pressburger		poor		50			ERR	Sam Fama		2.328	1.5342	2.788

ID	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER	COMMENT	X	Y	DIST
26 2045	32 Romanelli Ave., S. Hackensack, NJ	26-03-682	213	6	6" X 14'	Johnson	COOL	Superior Tape Co.	BrunSH	poor		50	8	150	0.33	Rinbrand Well		2.522	1.5342	2.951
26 3018	30 Wesley St., S. Hackensack, NJ	26-03-687	300	12	none			Spinnerin Yarn Co.	BrunSH	poor		55	8	155	0.35	Rinbrand Well		2.328	1.0228	2.542
26 4373	35 Empire Blvd., S. Hackensack, NJ	26-03-687	400	8	none		Diffus	J. Josephson, INC	BrunSH	poor		126	8	192	0.66	Rinbrand Well		2.328	1.0228	2.542
26 4423	100 Wesley St., S. Hackensack, NJ	26-03-687	300	6	none		COOL	Strannahan Foil Co.	BrunSH	poor		100	8	25	4.00	Rinbrand Well		2.328	1.0228	2.542
26 1626	??? Hudson? St., Hackensack, NJ	26-03-?91	415	8	unknown		IND	?? Bad Copy	BrunSH	poor		76	8	112	0.68	Artesian Well		-0.582	-0.767	0.962
26 3583	396 Terhune Ave., Passaic, NJ	26-03-7??	180	6	unknown		DOM	Joseph Filippone	BrunSH	poor		25	4	95	0.26	W.H. Beatty		-1.746	-1.278	2.164
26 4163	Main St., Wallington, NJ	26-03-739	300	10	unknown			Farmland Dairy, INC	BrunSH	poor		240	8	110	2.18	Burrows Well	D	-0.194	0.2557	0.320
26 4170	Main St., Wallington, NJ	26-03-739	400	12	unknown			Farmland Dairy, INC	BrunSH	poor		25	8	158	0.16	Burrows Well	D	-0.194	0.2557	0.320
26 715	Main Ave., Passaic, NJ	26-03-715	500	8	unknown		A/C	N.J. Bank and Trust, Co.	BrunSH	poor		?	?	?	ERR	Rinbrand Well		-1.552	0.5114	1.634
26 185	Main & Passaic Ave., Passaic, NJ	26-03-716	222	6	unknown		COOL	Bank of Passaic & Trust Co.	BrunSH	poor		55	8	20	2.75	Rinbrand Well		-1.358	0.5114	1.451
26 4350	Main St., Wallington, NJ	26-03-739	300	12	none		IND	Farmland Dairy, INC	BrunSH	poor		204	2.5	103	1.98	Burrows Well	D	-0.194	0.2557	0.320
26 3887	109 Howe St., Passaic, NJ	26-03-718	120	6	unknown		DOM	Mr. Intelisano	BrunSH	poor		20	6	30	0.67	John Lauritsen		-1.552	0.2557	1.572
26 3214	Oak & Linden St., Passaic, NJ	26-03-719	200	8	none		IND	Eastern Can Co.	BrunSH	poor		65	5	65	1.00	Rinbrand Well		-1.358	0.2557	1.381
26 3147	26 Jefferson St., Passaic, NJ	26-03-722	400	10	none		COOL	The Pantasote Co.	BrunSH	poor		97	8	165	0.59	Rinbrand Well		-0.97	0.7671	1.236
26 2147	26 Jefferson St., Passaic, NJ	26-03-722	305	8	none		COOL	The Pantasote Co.	BrunSH	poor		110	8	130	0.85	A.J. Connally,		-0.97	0.7671	1.236
26 3148	26 Jefferson St., Passaic, NJ	26-03-722	500	8	none		COOL	The Pantasote Co.	BrunSH	poor		110	8	150	0.73	Rinbrand Well		-0.97	0.7671	1.236
* 26 3087	Lester St., Wallington, NJ	26-03-727	400	12	none		Public	Borough of Wallington	BrunSH	poor		350	72	52	6.73	Rinbrand Well		-1.164	0.2557	1.191
* 26 2953	Maple & Union Blvd., Wallington, NJ	26-03-728	300	8	unknown		Test	Borough of Wallington	BrunSH	poor		90	24	211	0.43	Burrows Well	D	-0.97	0.2557	1.003
26 2602	8th St., Passaic, NJ	26-03-731	500	8	unknown		COOL	J.L. Prescott & Co.	BrunSH	poor		25	8	220	0.11	Rinbrand Well		-0.582	0.7671	0.962
26 205	176 Saddle River Ave., Garfield, NJ	26-03-731	230	8	unknown		COOL	Ten Brands Frozen Foods	BrunSH	poor		?	?	60	ERR	Rinbrand Well		-0.582	0.7671	0.962
* 26 3933	Dull Field, Wallington, NJ	26-03-735	400	10	unknown		Public	Borough of Wallington	BrunSH	poor		380	72	144	2.64	Burrows Well	D	-0.388	0.5114	0.641
* 26 3551	122 Prospect St., Garfield, NJ	26-03-737	95	6	unknown		DOM	Rose Tuminia	BrunSH	poor		20	8	35	0.57	John Lauritsen		-0.582	0.2557	0.635
* 26 5331	Hobart St., Garfield, NJ	26-03-733	400	12	none		Public	Borough of Wallington	BrunSH	OK		302	74	78	3.87	Rinbrand Well		-0.194	0.7671	0.791
26 4782	Main St., Wallington, NJ	26-03-739	500	8	none			Farmland Dairy	BrunSH	poor		225	8	170	1.32	Rinbrand Well		-0.194	0.2557	0.320
* 26 3608	Main St. & Midland Ave., Wallington, NJ	26-03-739	400	8	none			Borough of Wallington	BrunSH	poor		217	48	188	1.15	Rinbrand Well		-0.194	0.2557	0.320
26 1494	147 Falstrom Ct., Passaic, NJ	26-03-749	300	8	unknown		IND	Falstrom Co.	BrunSH	poor		145		149	0.97	Rinbrand Well		-1.358	-0.511	1.451
26-2013	River Rd., Carlton Hill, E. Rutherford, NJ	26-03-7??	378	8	unknown		IND	Royce Chemical Co.	BrunSH	poor		40	8	150	0.27	Rinbrand Well		-1.746	-1.278	2.164
26 201?	River Rd., Carlton Hill, E. Rutherford, NJ	26-03-75?	455	8	none		IND	Royce Chemical Co.	BrunSH	poor		97	8	170	0.57	Rinbrand Well		-1.164	-0.511	1.271
26 1342	28 Paulison Ave., Passaic, NJ	26-03-746	54	8	8" X 20'	R.B.	IND	Greory Machine	sand	poor		200		4	50.00	North Jersey	A	-1.358	-0.255	1.381
26 1341	28 Paulison Ave., Passaic, NJ	26-03-746	78	8	8" X 21'	R.B.	IND	Greory Machine	sand	poor		200	4	2	100.00	North Jersey	A	-1.358	-0.255	1.381
26 7723	19 37 Delaware Ave., Passaic, NJ	26-03-747	500	6	unknown		IND	Acme Engraving	BrunSH	poor		60			ERR	Wm. Stothoff	C	-1.746	-0.511	1.819
26 1593	28 Paulison Ave., Passaic, NJ	26-03-751	300	8	unknown		A/C	Greory Machine		no		300	5	24	12.50	North Jersey	A	-1.164	0	1.164
26 7420	Main & Paterson Aves., Wallington, NJ	26-03-752	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.97	0	0.97
26 7421	Main & Paterson Aves., Wallington, NJ	26-03-752	16	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.97	0	0.97
26 7422	Main & Paterson Aves., Wallington, NJ	26-03-752	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.97	0	0.97
26 7423	Main & Paterson Aves., Wallington, NJ	26-03-752	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.97	0	0.97
26 7473	Main & Paterson Aves., Wallington, NJ	26-03-752	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.97	0	0.97
26 597	148 River St., Passaic, NJ	26-03-754	200	6	unknown		COOL	Ray's Diner	BrunSH	poor		35		60	0.58	Rinbrand Well		-1.164	-0.255	1.191
26 3705	Carlton Hill, E. Rutherford, NJ	26-03-757	370	8	none		COOL	Royce Chemical Co.	BrunSH	poor		60	8	172	0.35	Rinbrand Well		-1.164	-0.511	1.271
26 3706	Carlton Hill, E. Rutherford, NJ	26-03-757	370	8	none		COOL	Royce Chemical Co.	BrunSH	poor		60	8	115	0.52	Rinbrand Well		-1.164	-0.511	1.271
26 4469	17 Carlton Ave., E. Rutherford, NJ	26-03-757	468	8	none		COOL	Royce Chemical Co.	BrunSH	poor		35	8	174	0.20	Rinbrand Well		-1.164	-0.511	1.271
26-1761	2 Paulison Ave., Passaic, NJ	26-03-7??	300	8	unknown			Tasony Fabrics INC	BrunSH	poor		329	8	90	3.66	Rinbrand Well		-1.746	-1.278	2.164
26 7584	Main Ave. & Paterson Rd., Wallington, NJ	26-03-755	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.97	-0.255	1.003
26 7585	Main Ave. & Paterson Rd., Wallington, NJ	26-03-755	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.97	-0.255	1.003
26 7586	Main Ave. & Paterson Rd., Wallington, NJ	26-03-755	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.97	-0.255	1.003
26 7587	Main Ave. & Paterson Rd., Wallington, NJ	26-03-755	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.97	-0.255	1.003
26 7713	Main Ave. & Paterson Rd., Wallington, NJ	26-03-755	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.97	-0.255	1.003
* 26 2953	Maple & Rose, Wallington, NJ	26-03-756	300	8	unknown		Test	Borough of Wallington	BrunSH	poor		30	3	280	0.11	Burrows Well	D	-0.776	-0.255	0.817
26 4341	164 Madison St., E. Rutherford, NJ	26-03-757	300	8	unknown		IND	Lester Entin Associates	BrunSH	poor		450	8	100	4.50	Somerville Wel		-1.164	-0.511	1.271
26 4312	164 Madison St., E. Rutherford, NJ	26-03-757	580	6	unknown			Lester Entin Associates		no		150	24	238	0.63	Somerville Wel		-1.164	-0.511	1.271
26 4382	164 Madison St., E. Rutherford, NJ	26-03-757	470	10	none		COOL	Lester Entin Associates	BrunSH	poor		430	8	112	3.84	Rinbrand Well		-1.164	-0.511	1.271
* 26 4103	Lizette St. & Fleishers Brook, Garfield, N	26-03-758	300	10	none			City of Garfield	BrunSH	OK		69	27	158	0.44	Burrows Well	D	-0.97	-0.511	1.096
* 26 3934	Main Ave., Wallington, NJ	26-03-761	400	12	none		Public	Borough of Wallington	BrunSH	OK		278	46.5	97	2.87	Burrows Well	D	-0.582	0	0.582

ID#	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER	COMMENT	X	Y	DIST
* * 26 5176	31 Kossuth St., Wallington, NJ	26-03-762	118	6	unknown		DOM	Mr. Kowalowitz	BrunSH	poor		20	4	54	0.37	Pine Brook Wel		-0.388	0	0.388
* 26 3423	Jefferson Ave., Wallington, NJ	26-03-768	400	8	none		Public	Borough of Wallington	BrunSH	poor		217	24	65	3.34	Rinbrand Well		-0.388	-0.511	0.641
26 4525	41 River St., E. Rutherford, NJ	26-03-775	20	6	7.5" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.022	1.858
26 4532	41 River St., E. Rutherford, NJ	26-03-778	25	6	3.5" X 10'	Set in		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4524	41 River St., E. Rutherford, NJ	26-03-778	52	6	7.5" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4530	41 River St., E. Rutherford, NJ	26-03-778	25	6	3.5" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4528	41 River St., E. Rutherford, NJ	26-03-778	26	6	6" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4526	41 River St., E. Rutherford, NJ	26-03-778	20	6	7.5" X 7.5	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4529	41 River St., E. Rutherford, NJ	26-03-778	25	6	7.5" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4527	41 River St., E. Rutherford, NJ	26-03-778	20	6	6" X 7.5'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4531	41 River St., E. Rutherford, NJ	26-03-778	25	6	3.5" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 6606	Erie & Jackson, Rutherford, NJ	26-03-783	24	4	4" X 15'	PVC		Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.776	-0.767	1.091
26 6607	Erie & Jackson, Rutherford, NJ	26-03-783	22	4	4" X 15'	PVC		Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.776	-0.767	1.091
26 6608	Erie & Jackson, Rutherford, NJ	26-03-783	18	4	4" X 12'	PVC		Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.776	-0.767	1.091
26 6609	Erie & Jackson, Rutherford, NJ	26-03-783	18	4	4" X 12'	PVC		Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.776	-0.767	1.091
26 5289	455 Paterson Ave., Wallington, NJ	26-03-792	200	6	unknown		Car Wash	King Car Wash	BrunSH	poor		55	2	77	0.71	E.S. Richardso		-0.388	-0.767	0.859
26 5	411 Broad St., Carlstadt, NJ	26-03-793	526	8	unknown		IND	Canes Chemical Works	BrunSH	poor		185	8	156	1.19	Parkhurst Well		-0.194	-0.767	0.791
26 1413	Paterson Ave., Carlstadt, NJ	26-03-796	200	8	unknown		A/C	Grand Union Food Stores		no		150	8	40	3.75	Burrows Well D		-0.194	-1.022	1.041
26 3021	Broad & Union Sts., Carlstadt, NJ	26-03-8??	200	6	unknown		IND	Record Electrical Plating Co.	BrunSH	poor		90	8	70	1.29	Rinbrand Well		0	-1.278	1.278
26 4391	192 Paterson Plank Rd., Carlstadt, NJ	26-03-8??	171	6	none		DOM	Peoples Bank of S. Bergen Co.	BrunSH	poor		25	4		ERR	Rinbrand Well		0	-1.278	1.278
26 7635	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	24.8	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		3	0.5	23	0.13	HP Drilling, I		0.194	0.5114	0.546
26-7636	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	27	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		2	0.5	10	0.20	HP Drilling, I		0.194	0.5114	0.546
26-7637	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	25.3	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		1	0.5	5.5	0.18	HP Drilling, I		0.194	0.5114	0.546
26 7638	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	27	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		4	1	11.9	0.34	HP Drilling, I		0.194	0.5114	0.546
26 7639	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	25	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		1.5	0.5	8.5	0.18	HP Drilling, I		0.194	0.5114	0.546
26 7640	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	24.9	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good				7.4	ERR	HP Drilling, I		0.194	0.5114	0.546
26 7641	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	24.8	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		2	1	5.2	0.38	HP Drilling, I		0.194	0.5114	0.546
26 7642	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	24	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		2		7.6	0.26	HP Drilling, I		0.194	0.5114	0.546
26 7643	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	82	4	3.75" X 21	Nkl.	OBS	Curtiss Wright Corp.	BrunSH	good		1	1		ERR	HP Drilling, I		0.194	0.5114	0.546
26 7644	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	81	4	3.75" X 20	Nkl.	OBS	Curtiss Wright Corp.	BrunSH	good		1	1	43.5	0.02	HP Drilling, I		0.194	0.5114	0.546
26 7645	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	81	4	4.75" X 20	Nkl.	OBS	Curtiss Wright Corp.	BrunSH	poor		3	1	52.4	0.06	HP Drilling, I		0.194	0.5114	0.546
26-7646	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	61.5	4	3.75" X 20	Nkl.	OBS	Curtiss Wright Corp.	BrunSH	good		10	1	22.6	0.44	HP Drilling, I		0.194	0.5114	0.546
26-7647	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	81	4	none		OBS	Curtiss Wright Corp.	BrunSH	good		3	1	41.1	0.07	HP Drilling, I		0.194	0.5114	0.546
26-7648	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	82	4	3.75" X 20	Nkl.	OBS	Curtiss Wright Corp.	BrunSH	good			1	29.4	ERR	HP Drilling, I		0.194	0.5114	0.546
	Wood Ridge, NJ	26-03-816	340	10	unknown		IND	Wright Aeronautical Equip. Co.		no		405		93	4.35	Artesian Well		0.388	0.5114	0.641
	Wood Ridge, NJ	26-03-816	337	10	unknown		IND	Wright Aeronautical Equip. Co.		no		264	8	135	1.96	Artesian Well		0.388	0.5114	0.641
	Wood Ridge, NJ	26-03-816	312	10	unknown		IND	Wright Aeronautical Equip. Co.		no		350		98	3.57	Artesian Well		0.388	0.5114	0.641
* 26-3914	232 Springfield Ave, Hasbrouck Hgts., NJ	26-03-816	160	6	unknown		DOM	Mr. Amato	BrunSH	poor		50	4	100	0.50	John Lauritsen		0.388	0.5114	0.641
26 4250	Main St., Wallington, NJ	26-03-817	300	12	none		IND	Farmland Dairy	BrunSH	poor		284	8.5	103	2.76	Burrows Well D		0	0.2557	0.255
26 811	520 Main Ave., Wallington, NJ	26-03-817	397	8	unknown		Rechg.	Tube Reducing Corp.	BrunSH	poor		90	4	150	0.60	Burrows Well D		0	0.2557	0.255
26 812	520 Main Ave., Wallington, NJ	26-03-817	265	8	unknown		IND	Tube Reducing Corp.	BrunSH	poor		110	4	150	0.73	Burrows Well D		0	0.2557	0.255
26-812A	520 Main Ave., Wallington, NJ	26-03-817	392	8	unknown		Rechg.	Tube Reducing Corp.	BrunSH	poor		20	4	150	0.13	Burrows Well D		0	0.2557	0.255
26 420	Main St., Wallington, NJ	26-03-817	650	12	none		Dairy	Farmland Dairy	BrunSH	poor		157		279	0.56	Rinbrand Well		0	0.2557	0.255
26-4169	Main St., Wallington, NJ	26-03-817	650	8	none		Dairy	Farmland Dairy	BrunSH	poor		59		240	0.25	Rinbrand Well		0	0.2557	0.255
* 26-5848	138 Woodside Ave., Hasbrouck Hgts., NJ	26-03-822	162	6	unknown		DOM	Robert Daub		no		32	2	54	0.59	E.S. Richardso		0.776	0.7671	1.091
26 4953	Ottowa Ave., Hasbrouck Hgts, NJ	26-03-822	98	6	unknown		DOM	Gary Van Hook		no		28	2	14	2.00	E.S. Richardso		0.776	0.7671	1.091
26 5023	22 Ottowa Ave., Hasbrouck Hgts., NJ	26-03-823	112	6	none		DOM	Anthony Jenkins		no		35	2	51	0.69	E.S. Richardso		0.97	0.7671	1.236
26 5013	117 Paterson Ave., Hasbrouck Hgts., NJ	26-03-823	118	6	none		DOM	Robert D. Mitchell	BrunSH	poor		30	2	16	1.88	E.S. Richardso		0.97	0.7671	1.236
26 592	Wright Village, Terhune Ave., Lodi, NJ	26-03-824	309	8	unknown		A/C	Food Fair Stores, INC	BrunSH	poor		150	24	160	0.94	Burrows Well D		0.582	0.5114	0.774
26 5307	165 Bell Ave., Hasbrouck Hgts., NJ	26-03-826	150	6	unknown		DOM	Stephen Kriso		no		30	2	24	1.25	E.S. Richardso		0.97	0.5114	1.096
26 6123	Lot 4, Block 27, Hasbrouck Hgts., NJ	26-03-826	15	3	3" X 15'	PVC	OBS	Exxon	sand	good					ERR	Diamond Drilli		0.97	0.5114	1.096
26 6124	Lot 4, Block 27, Hasbrouck Hgts., NJ	26-03-826	14	3	3" X 14'	PVC	OBS	Exxon	sand	good					ERR	Diamond Drilli		0.97	0.5114	1.096
26 6125	Lot 4, Block 27, Hasbrouck Hgts., NJ	26-03-826	16	3	3" X 16'	PVC	OBS	Exxon	sand	good					ERR	Diamond Drilli		0.97	0.5114	1.096

REFERENCE NO. 19

CHARACTERISTICS OF THE POPULATION

General Population Characteristics

NEW JERSEY

1980 Census of Population

U.S. Department of Commerce
BUREAU OF THE CENSUS

Table 44. **General Characteristics for Counties and County Subdivisions: 1980**

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Counties County Subdivisions	Race: Total persons: Total	Male	Female	Under 18 years	65 years and over	Median age	In group quarters	White: Persons	White: Households: Total	White: Households: Persons	Black: Persons	Black: Households: Total	Black: Households: Persons	Spanish origin[1]: Persons	Spanish origin: Households: Total	Spanish origin: Households: Persons
Atlantic County	194 119	91 163	102 956	51 062	30 787	33.0	2 807	154 831	58 886	152 721	34 134	11 540	33 592	7 590	2 008	[illegible]
Absecon city	6 859	3 294	3 565	1 893	778	32.9	20	6 624	2 219	6 613	166	58	157	72	22	[illegible]
Atlantic City city	40 199	17 359	22 840	9 737	9 446	38.5	1 431	18 614	9 032	17 596	20 029	7 290	19 703	2 323	621	[illegible]
Brigantine city	8 318	4 101	4 217	1 641	1 324	34.5	15	8 136	3 377	8 144	76	36	74	101	33	[illegible]
Buena borough	3 642	1 774	1 868	946	465	31.7	4	3 320	1 172	3 309	58	18	59	483	134	[illegible]
Buena Vista township	6 959	3 418	3 541	2 387	704	28.7	6	5 289	1 624	5 274	1 386	399	1 389	527	119	[illegible]
Corbin City city	254	125	129	42	76	50.3	-	244	107	...	10	2	...	1	-	[illegible]
Egg Harbor township	19 381	9 418	9 963	6 185	1 843	28.9	27	17 154	6 137	17 137	1 961	594	1 968	344	100	[illegible]
Egg Harbor City city	4 618	2 160	2 458	1 284	625	31.1	30	3 626	1 389	3 603	509	162	493	716	199	[illegible]
Estell Manor city	848	429	419	277	87	29.6	-	799	257	799	43	11	...	2	1	[illegible]
Folsom borough	1 892	947	945	702	122	26.8	-	1 814	544	1 817	54	17	55	24	3	[illegible]
Galloway township	12 176	6 149	6 027	3 367	1 088	27.6	55	11 340	3 674	11 316	698	209	701	181	52	[illegible]
Hamilton township	9 499	4 691	4 808	2 677	1 070	29.7	202	7 964	2 856	7 850	1 378	419	1 281	211	60	[illegible]
Hammonton town	12 298	5 915	6 383	3 307	1 530	32.7	118	11 722	3 944	11 597	125	35	120	939	230	[illegible]
Linwood city	6 144	2 985	3 159	1 788	710	34.3	142	6 078	1 922	5 934	20	5	19	57	18	[illegible]
Longport borough	1 249	549	700	153	475	58.2	70	1 247	561	...	2	-	...	5	2	[illegible]
Margate City city	9 179	4 214	4 965	1 688	1 969	46.0	-	9 105	3 824	9 126	12	1	...	55	14	[illegible]
Mullica township	5 243	2 549	2 694	1 779	538	28.9	47	4 310	1 391	4 247	423	124	428	706	158	[illegible]
Northfield city	7 795	3 725	4 070	2 072	1 052	35.2	218	7 654	2 485	7 469	90	20	64	68	15	[illegible]
Pleasantville city	13 435	6 146	7 289	3 950	2 111	31.2	280	6 321	2 564	6 106	6 712	1 993	6 648	538	142	[illegible]
Port Republic city	837	410	427	228	88	32.9	-	834	297	836	1		...	-	-	[illegible]
Somers Point city	10 330	4 829	5 501	2 381	1 910	33.2	136	9 997	4 164	9 880	243	98	242	88	35	[illegible]
Ventnor City city	11 704	5 357	6 347	2 188	2 623	40.6	3	11 499	4 966	11 506	35	15	32	115	41	[illegible]
Weymouth township	1 260	619	641	390	153	29.2	3	1 140	380	1 137	103	33	105	34	9	[illegible]
Bergen County	845 385	405 372	440 013	199 135	105 276	35.4	7 684	784 834	281 975	779 184	33 043	10 858	31 929	28 514	8 362	[illegible]
Allendale borough	5 901	2 852	3 049	1 804	556	33.7	181	5 811	1 680	5 641	15	5	12	61	14	[illegible]
Alpine borough	1 549	787	762	410	124	36.4	-	1 488	480	1 496	19	2	7	36	9	[illegible]
Bergenfield borough	25 568	12 306	13 262	6 145	3 167	34.1	-	24 044	8 408	24 066	456	155	451	1 251	330	[illegible]
Bogota borough	8 344	3 979	4 365	2 159	965	31.4	11	8 094	2 784	8 094	51	18	41	527	156	[illegible]
Carlstadt borough	6 166	2 978	3 188	1 399	805	33.7	-	6 081	2 283	6 086	10	5	...	153	43	[illegible]
Cliffside Park borough	21 464	10 216	11 248	3 806	3 406	39.6	38	20 518	8 709	20 508	215	92	202	939	327	[illegible]
Closter borough	8 164	4 012	4 152	2 145	818	35.5	-	7 654	2 484	7 665	81	26	73	205	42	[illegible]
Cresskill borough	7 609	3 689	3 920	1 964	1 014	37.6	93	7 251	2 262	7 170	50	17	42	194	51	[illegible]
Demarest borough	4 963	2 446	2 517	1 390	473	36.2	28	4 640	1 449	4 629	37	5	18	133	33	[illegible]
Dumont borough	18 334	8 764	9 570	4 593	2 296	34.1	-	17 752	5 944	17 769	87	24	79	706	173	[illegible]
East Rutherford borough	7 849	3 715	4 134	1 523	1 183	34.5	161	7 529	3 016	7 395	184	62	166	191	64	[illegible]
Edgewater borough	4 628	2 325	2 303	849	503	32.3	-	4 337	1 981	4 375	64	26	62	218	74	[illegible]
Elmwood Park borough	18 377	8 709	9 668	3 889	2 670	37.2	-	17 812	6 546	17 802	75	25	76	768	230	[illegible]
Emerson borough	7 793	3 745	4 048	2 040	860	35.4	280	7 476	2 152	7 228	34	5	19	133	36	[illegible]
Englewood city	23 701	10 997	12 704	5 770	3 334	35.7	190	12 641	5 016	12 511	9 629	3 201	9 598	2 076	587	[illegible]
Englewood Cliffs borough	5 698	2 757	2 941	1 423	633	40.5	81	5 066	1 597	5 021	44	10	20	220	54	[illegible]
Fair Lawn borough	32 229	15 546	16 683	6 790	4 609	40.6	17	31 787	11 454	31 797	65	19	51	560	180	[illegible]
Fairview borough	10 519	5 059	5 460	2 098	1 643	36.3	9	10 181	4 120	10 164	14	4	...	610	186	[illegible]
Fort Lee borough	32 449	15 410	17 039	5 368	5 470	40.1	10	28 599	13 538	28 659	551	298	520	1 342	488	[illegible]
Franklin Lakes borough	8 769	4 470	4 299	2 801	570	34.3	-	8 583	2 468	8 612	13	-	...	74	11	[illegible]
Garfield city	26 803	12 699	14 104	5 541	4 177	34.2	25	26 214	10 551	26 196	298	107	301	953	296	[illegible]
Glen Rock borough	11 497	5 533	5 964	3 010	1 342	36.1	14	10 863	3 559	10 869	317	104	315	142	42	[illegible]
Hackensack city	36 039	17 257	18 782	6 760	4 939	33.5	708	26 730	12 501	26 177	7 497	2 711	7 306	3 741	1 175	[illegible]
Harrington Park borough	4 532	2 225	2 307	1 399	350	33.4	-	4 291	1 290	4 298	44	9	42	75	13	[illegible]
Hasbrouck Heights borough	12 166	5 807	6 359	2 524	1 869	37.7	-	11 987	4 397	12 011	11	3	...	261	72	[illegible]
Haworth borough	3 509	1 708	1 801	965	389	36.8	-	3 304	1 041	3 322	62	14	...	61	10	[illegible]
Hillsdale borough	10 495	5 135	5 360	2 927	869	33.9	-	10 236	3 157	10 252	41	13	41	185	46	[illegible]
Ho-Ho-Kus borough	4 129	1 973	2 156	1 076	477	37.8	-	4 057	1 362	4 068	6	-	...	63	8	[illegible]
Leonia borough	8 027	3 765	4 262	1 828	1 236	37.8	-	7 483	2 919	7 510	198	78	194	343	103	[illegible]
Little Ferry borough	9 399	4 621	4 778	2 031	954	32.7	-	8 964	3 550	8 945	117	76	124	411	143	[illegible]
Lodi borough	23 956	11 346	12 610	5 228	2 769	31.5	144	22 954	8 973	22 836	354	136	337	1 082	363	[illegible]
Lyndhurst township	20 326	9 606	10 720	4 324	2 828	35.8	11	20 016	7 309	20 022	8	4	...	482	153	[illegible]
Mahwah township	12 127	6 053	6 074	3 266	938	31.3	678	11 277	3 536	10 779	381	80	261	208	49	[illegible]
Maywood borough	9 895	4 715	5 180	2 187	1 506	37.3	-	9 669	3 578	9 701	21	4	17	318	99	[illegible]
Midland Park borough	7 381	3 553	3 828	1 850	924	32.9	-	7 298	2 539	7 314	3	3	...	67	20	[illegible]
Montvale borough	7 318	3 619	3 699	2 227	499	32.7	18	7 204	2 245	7 185	15	4	17	113	29	[illegible]
Moonachie borough	2 706	1 333	1 373	552	256	35.1	-	2 665	996	2 662	3	2	...	47	14	[illegible]
New Milford borough	16 876	7 937	8 939	3 590	2 440	37.0	226	16 264	6 030	16 046	115	42	111	421	120	[illegible]
North Arlington borough	16 587	7 596	8 991	3 115	2 740	40.3	22	16 315	6 395	16 306	7	2	...	557	174	[illegible]
Northvale borough	5 046	2 459	2 587	1 471	420	32.4	-	4 888	1 448	4 888	3	1	...	251	66	[illegible]
Norwood borough	4 413	2 200	2 213	1 291	379	33.9	-	4 239	1 256	4 252	8	2	...	92	20	[illegible]
Oakland borough	13 443	6 693	6 750	4 005	789	31.3	186	13 164	3 809	12 986	94	26	99	209	52	[illegible]
Old Tappan borough	4 168	2 043	2 125	1 341	321	33.5	42	4 069	1 154	4 048	16	4	11	56	14	[illegible]
Oradell borough	8 658	4 221	4 437	2 256	1 010	37.6	22	8 393	2 707	8 374	12	2	...	88	23	[illegible]
Palisades Park borough	13 732	6 481	7 251	2 819	1 976	34.5	-	12 790	5 237	12 815	35	18	33	618	199	[illegible]
Paramus borough	26 474	12 774	13 700	6 471	2 807	37.3	1 165	25 343	7 399	24 269	112	13	47	604	164	[illegible]
Park Ridge borough	8 515	4 168	4 347	2 376	719	32.9	10	8 281	2 697	8 285	47	9	38	134	33	[illegible]
Ramsey borough	12 899	6 316	6 583	3 886	1 074	33.0	28	12 600	4 054	12 576	68	21	69	137	41	[illegible]
Ridgefield borough	10 294	4 875	5 419	2 045	1 643	39.7	-	10 095	3 839	10 098	13	5	...	359	111	[illegible]
Ridgefield Park village	12 738	5 958	6 780	2 795	1 644	33.0	27	12 429	4 770	12 402	59	23	53	574	181	[illegible]
Ridgewood village	25 208	11 900	13 308	7 204	3 035	35.6	194	24 101	8 015	23 976	502	161	478	434	109	[illegible]
River Edge borough	11 111	5 254	5 857	2 417	1 725	38.9	-	10 815	4 036	10 832	6	1	...	254	77	[illegible]
River Vale township	9 489	4 598	4 891	2 753	593	33.8	72	9 170	2 774	9 121	44	11	32	152	33	[illegible]
Rochelle Park township	5 603	2 616	2 987	1 169	978	39.9	-	5 538	2 040	5 543	-	-	-	111	26	[illegible]
Rockleigh borough	192	106	86	72	23	31.0	46	186	56	146	3	-	...	3	1	[illegible]
Rutherford borough	19 068	8 975	10 093	4 118	2 798	34.6	604	17 986	6 587	17 519	471	132	387	540	147	[illegible]
Saddle Brook township	14 084	6 769	7 315	3 104	1 412	34.6	97	13 858	4 730	13 772	41	18	39	262	73	[illegible]
Saddle River borough	2 763	1 365	1 398	668	356	40.9	14	2 708	872	2 716	13	-	...	25	4	[illegible]
South Hackensack township	2 229	1 083	1 146	507	258	33.8	-	2 172	721	2 164	23	11	25	123	31	[illegible]
Teaneck township	39 007	18 622	20 385	9 388	4 933	35.1	1 570	27 826	9 766	26 595	9 184	2 448	8 970	1 888	480	[illegible]
Tenafly borough	13 552	6 439	7 113	3 514	1 973	39.4	127	12 777	4 486	12 719	81	10	34	404	108	[illegible]

[1]Persons of Spanish origin may be of any race.

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Counties County Subdivisions	Total persons: Total	Total persons: Male	Total persons: Female	Total persons: Under 18 years	Total persons: 65 years and over	Total persons: Median age	Total persons: In group quarters	Race: White: Persons	Race: White: Households: Total	Race: White: Households: Persons	Race: Black: Persons	Race: Black: Households: Total	Race: Black: Households: Persons	Spanish origin[1]: Persons	Spanish origin[1]: Households: Total	Spanish origin[1]: Households: Persons
Bergen County—Con.																
Teterboro borough	19	10	9	1	3	50.5	–	19	10	19	–	–	–	–	–	–
Upper Saddle River borough	7 958	3 967	3 991	2 456	437	35.1	–	7 734	2 227	7 745	71	13	59	96	18	91
Waldwick borough	10 802	5 314	5 488	2 984	771	31.6	16	10 552	3 222	10 545	41	10	33	204	52	170
Wallington borough	10 741	5 125	5 616	2 003	1 354	34.0	8	10 380	4 429	10 384	146	79	149	240	84	216
Washington township	9 550	4 683	4 867	2 653	614	33.7	10	9 284	2 744	9 294	33	9	27	162	35	120
Westwood borough	10 714	5 007	5 707	2 591	1 559	34.4	109	9 819	3 532	9 737	628	199	626	209	55	180
Woodcliff Lake borough	5 644	2 790	2 854	1 746	419	35.0	103	5 494	1 581	5 409	18	3	14	65	10	39
Wood-Ridge borough	7 929	3 796	4 133	1 771	1 080	36.1	–	7 815	2 777	7 833	20	6	17	124	31	97
Wyckoff township	15 500	7 522	7 978	4 494	1 572	36.3	289	15 174	4 681	14 935	59	12	44	171	39	141
Burlington County	362 542	181 636	180 906	107 342	28 682	29.2	16 216	306 987	100 159	296 811	45 471	12 583	42 232	8 658	1 997	6 857
Bass River township	1 344	650	694	398	194	32.1	–	1 342	487	1 341	1	1	...	8	6	...
Beverly city	2 919	1 440	1 479	865	325	28.7	–	2 258	784	2 259	565	170	558	104	30	111
Bordentown city	4 441	2 042	2 399	1 034	636	32.5	34	3 766	1 504	3 732	617	236	617	65	14	42
Bordentown township	7 170	3 605	3 565	1 769	578	31.4	293	6 691	2 340	6 532	330	92	228	112	35	87
Burlington city	10 246	4 811	5 435	2 575	1 443	33.7	54	7 853	2 966	7 802	2 301	786	2 309	137	44	137
Burlington township	11 527	5 485	6 042	3 318	1 031	29.4	283	9 048	3 038	8 766	2 170	741	2 226	233	68	206
Chesterfield township	3 867	2 695	1 172	824	198	25.1	1 538	2 778	712	2 252	913	17	58	186	5	17
Cinnaminson township	16 072	7 891	8 181	4 790	1 200	33.6	131	14 931	4 254	14 800	884	285	893	84	19	77
Delanco township	3 730	1 830	1 900	1 009	466	32.3	31	3 705	1 277	3 679	13	3	...	19	5	21
Delran township	14 811	7 376	7 435	4 752	814	29.7	8	13 658	4 335	13 662	859	349	857	139	42	119
Eastampton township	3 814	1 879	1 935	1 057	226	29.3	6	3 400	1 326	3 390	286	116	301	86	31	88
Edgewater Park township	9 273	4 489	4 784	2 651	581	28.4	–	7 879	2 915	7 912	1 219	411	1 228	170	51	150
Evesham township	21 508	10 520	10 988	7 140	1 125	29.3	101	20 651	6 512	20 598	427	125	418	205	43	145
Fieldsboro borough	597	302	295	175	62	31.7	–	424	135	418	165	47	...	8	3	...
Florence township	9 084	4 311	4 773	2 372	1 020	32.4	15	8 372	3 056	8 358	638	231	645	58	23	53
Hainesport township	3 236	1 603	1 633	862	353	31.9	–	3 161	1 109	3 171	33	9	33	31	10	29
Lumberton township	5 236	2 492	2 744	1 281	644	31.4	122	4 800	1 827	4 699	278	128	285	132	45	127
Mansfield township	2 523	1 231	1 292	715	272	33.7	–	2 487	819	2 489	8	2	...	29	5	18
Maple Shade township	20 525	9 849	10 676	4 238	2 356	32.1	289	19 339	8 043	19 113	791	378	751	240	87	218
Medford township	17 622	8 604	9 018	5 990	1 257	31.2	112	17 388	5 449	17 291	67	26	67	85	19	82
Medford Lakes borough	4 958	2 477	2 481	1 613	278	32.0	–	4 917	1 472	4 922	–	–	–	17	5	14
Moorestown township	15 596	7 301	8 295	4 095	2 299	38.0	451	14 474	4 883	14 043	919	332	924	81	25	76
Mount Holly township	10 818	5 184	5 634	3 139	1 085	30.0	135	8 739	3 092	8 663	1 730	501	1 716	528	146	509
Mount Laurel township	17 614	8 718	8 896	5 603	1 071	31.2	336	16 472	5 108	16 185	806	234	778	156	43	133
New Hanover township	14 258	10 710	3 548	2 334	41	20.7	10 550	9 021	767	2 542	3 969	272	949	1 376	98	337
North Hanover township	9 050	4 536	4 514	3 469	258	24.8	–	7 263	2 307	7 368	1 252	379	1 328	386	92	328
Palmyra borough	7 085	3 369	3 716	1 659	831	32.8	–	6 203	2 421	6 210	818	262	818	45	15	36
Pemberton borough	1 198	568	630	342	119	27.8	–	1 036	394	1 039	85	37	92	46	13	41
Pemberton township	29 720	14 580	15 140	10 769	1 395	26.0	351	21 715	6 769	21 553	5 984	1 784	6 325	1 644	438	1 602
Riverside township	7 941	3 816	4 125	1 961	1 065	32.4	11	7 665	2 791	7 659	205	67	202	146	45	145
Riverton borough	3 068	1 494	1 574	760	438	33.8	64	2 977	1 059	2 917	80	26	82	5	2	...
Shamong township	4 537	2 304	2 233	1 635	238	29.3	47	4 424	1 323	4 404	91	15	73	29	5	16
Southampton township	8 808	4 146	4 662	1 891	2 377	44.4	5	8 693	3 486	8 712	51	17	48	52	17	47
Springfield township	2 691	1 322	1 369	818	216	31.2	32	2 646	824	2 613	27	14	30	45	12	44
Tabernacle township	6 236	3 165	3 071	2 322	325	28.6	3	6 076	1 767	6 091	113	34	115	47	12	41
Washington township	808	406	402	212	121	35.1	16	771	262	755	2	1	...	75	14	71
Westampton township	3 383	1 637	1 746	900	211	31.1	18	2 544	849	2 488	712	233	775	159	41	141
Willingboro township	39 912	19 558	20 354	14 411	1 318	27.0	33	23 400	6 678	23 319	15 102	3 967	15 473	1 321	287	1 191
Woodland township	2 285	1 730	555	417	167	32.8	1 147	2 099	362	1 118	163	11	14	32	4	11
Wrightstown borough	3 031	1 510	1 521	1 177	48	22.4	–	1 921	657	1 946	797	244	824	337	98	323
Camden County	471 650	225 202	246 448	137 437	49 232	30.4	4 194	383 245	135 412	379 890	67 232	21 667	66 747	20 626	5 198	20 009
Audubon borough	9 533	4 466	5 067	2 203	1 562	34.5	–	9 477	3 578	9 485	2	1	...	79	19	69
Audubon Park borough	1 274	581	693	287	244	41.4	–	1 269	493	1 268	–	–	–	8	3	...
Barrington borough	7 418	3 571	3 847	1 895	690	31.1	–	7 115	2 628	7 124	232	95	230	58	18	53
Bellmawr borough	13 721	6 719	7 002	3 762	1 158	31.5	25	13 559	4 411	13 554	62	24	58	104	30	83
Berlin borough	5 786	2 782	3 004	1 739	504	31.4	–	5 664	1 812	5 664	62	20	62	53	7	25
Berlin township	5 348	2 605	2 743	1 758	427	28.2	4	4 653	1 451	4 627	652	183	674	85	20	86
Brooklawn borough	2 133	1 038	1 095	543	297	34.8	–	2 122	775	2 123	1	–	...	22	6	19
Camden city	84 910	39 218	45 692	31 531	8 602	25.0	860	25 739	10 580	25 165	45 008	14 132	44 797	16 308	4 000	16 144
Cherry Hill township	68 785	33 433	35 352	19 773	5 777	34.3	699	64 530	20 661	63 917	1 649	545	1 640	800	217	758
Chesilhurst borough	1 590	777	813	535	154	28.4	48	463	152	413	1 058	299	1 064	22	6	26
Clementon borough	5 764	2 753	3 011	1 606	625	29.3	–	5 453	2 079	5 464	241	106	249	36	9	25
Collingswood borough	15 838	7 277	8 561	3 629	2 731	33.1	81	15 404	6 301	15 341	198	95	191	174	55	164
Gibbsboro borough	2 510	1 247	1 263	765	178	29.5	23	2 447	740	2 422	48	15	54	28	5	16
Gloucester township	45 156	21 966	23 190	13 827	3 007	28.2	572	42 458	14 141	42 001	1 968	708	1 900	433	121	356
Gloucester City city	13 121	6 396	6 725	3 583	1 800	32.5	107	13 021	4 585	12 940	22	2	9	104	29	91
Haddon township	15 875	7 438	8 437	3 460	2 810	38.9	–	15 680	6 184	15 701	77	27	73	112	39	99
Haddonfield borough	12 337	5 736	6 601	3 121	1 931	37.5	238	12 049	4 397	11 835	201	67	196	69	19	63
Haddon Heights borough	8 361	3 888	4 473	1 925	1 384	36.9	9	8 315	3 073	8 311	5	2	...	27	8	18
Hi-Nella borough	1 250	567	683	361	87	25.3	–	1 111	432	1 110	119	47	118	22	7	20
Laurel Springs borough	2 249	1 082	1 167	604	258	31.1	–	2 238	765	2 239	1	1	...	3	1	...
Lawnside borough	3 042	1 412	1 630	865	367	34.1	–	41	16	31	2 967	1 013	2 987	22	6	15
Lindenwold borough	18 196	8 724	9 472	4 538	1 064	27.2	19	15 570	6 472	15 554	2 265	972	2 275	265	85	219
Magnolia borough	4 881	2 352	2 529	1 358	428	29.6	–	4 240	1 405	4 248	592	230	580	46	13	39
Merchantville borough	3 972	1 763	2 209	911	788	36.6	21	3 923	1 553	3 899	21	8	21	24	9	25
Mount Ephraim borough	4 863	2 323	2 540	1 045	755	39.7	9	4 838	1 852	4 836	10	8	...	24	7	17
Oaklyn borough	4 223	1 989	2 234	856	795	38.5	–	4 193	1 754	4 194	3	2	...	30	5	20
Pennsauken township	33 775	16 159	17 616	8 509	4 519	33.9	187	30 619	10 587	30 426	2 600	796	2 610	499	126	500
Pine Hill borough	8 684	4 166	4 518	2 491	764	27.5	–	8 017	3 054	8 014	560	216	563	92	30	82
Pine Valley borough	23	13	10	4	4	49.5	–	23	11	23	–	–	–	–	–	–
Runnemede borough	9 461	4 648	4 813	2 393	901	31.7	–	9 227	3 193	9 235	144	69	149	94	27	75
Somerdale borough	5 900	2 899	3 001	1 587	513	31.3	–	5 034	1 744	5 040	766	227	776	100	27	87
Stratford borough	8 005	3 850	4 155	2 220	685	30.9	104	7 582	2 452	7 484	331	122	321	87	22	73
Tavistock borough	9	...	...	...	...	...	...	9	4	...	–	–	–	–	–	–
Voorhees township	12 919	6 330	6 589	3 708	772	29.9	82	11 584	4 157	11 527	771	283	768	138	48	119

[1]Persons of Spanish origin may be of any race.

REFERENCE NO. 20

FORM 87

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Permit No. 26-4828

Application No. ______

County ______

WELL RECORD

26-13-227

1. OWNER Marathon Enterprises ADDRESS E. Union Ave., Rutherford, N.J.
   Owner's Well No. 1 SURFACE ELEVATION 18 Feet (Above mean sea level)
2. LOCATION same
3. DATE COMPLETED 2/10/80 DRILLER E. S. Richardson
4. DIAMETER: top 6 inches Bottom 6 inches TOTAL DEPTH 242 Feet
5. CASING: Type steel Diameter 6 inches Length 83 Feet
6. SCREEN: Type ______ Size of Opening ______ Diameter ______ inches Length ______ Feet
   Range in Depth { Top ______ Feet; Bottom ______ Feet } Geologic Formation ______
   Tail piece: Diameter ______ inches Length ______ Feet
7. WELL FLOWS NATURALLY ----- Gallons per Minute at ______ Feet above surface
   Water rises to ______ Feet above surface
8. RECORD OF TEST: Date 2/8/81 Yield 65 Gallons per minute
   Static water level before pumping 14 Feet below surface
   Pumping level 60 feet below surface after 2 hours pumping
   Drawdown 46 Feet Specific Capacity ______ Gals. per min. per ft. of drawdown
   How Pumped submersible How measured in barrel
   Observed effect on nearby wells ______
9. PERMANENT PUMPING EQUIPMENT: I only drilled well and tested for capacity
   Type ______ Mfrs. Name ______
   Capacity ______ G.P.M. How Driven ______ H.P. ______ R.P.M. ______
   Depth of Pump in well ______ Feet Depth of Footpiece in well ______ Feet
   Depth of Air Line in well ______ Feet Type of Meter on Pump ______ Size ______ inches
10. USED FOR ______ AMOUNT { Average ______ Gallons Daily; Maximum ______ Gallons Daily }
11. QUALITY OF WATER ______ Sample: Yes ______ No. ______
    Taste ______ Odor ______ Color ______ Temp. ______ °F
12. LOG ______ Are samples available? ______
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)
13. SOURCE OF DATA ______
14. DATA OBTAINED BY ______ Date ______

REFERENCE NO. 21

NUS CORPORATION TELECON NOTE

CONTROL NO:	DATE: 2/7/90	TIME: 1500

DISTRIBUTION:

U.S. PRINTING INK File
TDD# 02-8910-32

BETWEEN:	OF:	PHONE:
Bob Siery	Wallington Public Works	(201) 777-1726

AND:

Peter Babich (NUS)

DISCUSSION:

I asked Mr. Siery about water usage in Wallington. He informed me that only 1 private residence uses groundwater for drinking. The residence is located on Kossuth Street.

Other uses include 3 commercial businesses and 1 farm (approx 7 acres) for irrigation.

Drinking water for Wallington is supplied by Passaic Valley Water Dept. For emergencies Wallington uses Hackensack Water Dept. as backup.

ACTION ITEMS: